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Use of Formative Assessment to Structure Flexible Differentiated Learning Groups: A Pathway to Equity

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USE OF FORMATIVE ASSESSMENT TO STRUCTURE FLEXIBLE DIFFERENTIATED LEARNING GROUPS: A PATHWAY TO EQUITY

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Dedication

To my own two boys who further inspired me to walk this path, my husband who made it possible and always provided a fresh lens on the challenges I encountered, and 24 students who allowed me a glimpse into their lives of learning. They are forever inscribed in my research and my heart.

Acknowledgments

In addition to those I have dedicated this text, there are many who were a special influence on this process and its fruition. Dr. Pilgren, my administrator, for creating an environment that promotes professional development and the pursuit of higher education. Your enthusiasm for my project and willingness to help me navigate this process has been truly exceptional. My job share partner, for supporting me throughout the research process. My co-workers and vice-principal for providing triangulation throughout this process. My chair, Dr. D'Amico, for giving me guidance as my research took shape and encouraging me to further pursue this path. My editor, Jennie Noakes, for stepping alongside me on the journey of proofreading and formatting. Your knowledge and insights are indispensable. My paternal grandparents, who during their life never wavered in their support of their only granddaughter's education and are instrumental in influencing the path I have taken in higher education. From them I have inherited the passion to pursue those things I hold dear to my heart with intense perseverance. My parents, who supported me innumerably in this endeavor. This is the result of a journey that started many years ago with your love and guidance.

Abstract

The action research contained in this study seeks to identify the impact of formative assessment in the structuring of flexible differentiation in order to provided equity within the self-contained classroom for all intersectionalities amongst elementary students. Grounded in community of practice theory, the research explores structures within flexible differentiation and small group learning that provide students of varied and overlapping identities with access and equity within the four walls of the self-contained classroom. Additionally, the influence of flexible differentiation on the affective nature of students was explored. The teacher-researcher utilized a mixed-methods approach in order to provide a holistic picture. Data analysis in this research study revealed that the impact of differentiation on student achievement appeared to be situational and that key elements of differentiation, such as teacher proximity and intentionality in instruction, contributed to student's academic growth.

Preface

"And what does the Lord require of you? To act justly and to love mercy and to walk humbly with your God." – Micah 6:8 (TNIV)

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Foreword

This text honors a family legacy begun by my grandparents, Jim and Theda Gostin, when they decided to ignore the recommendations of my mother's high school guidance counselor and send her to college to become the teacher she always wanted to be. All it takes is the belief of one to make a difference in the life of a young person. My mother had two. Two people that believed that her gifts outweighed her disabilities. They made a pact they would not repeat the advice of the guidance counselor and provided the path for my mother to attend college.

Many years later, they showed up at the school where she was now an award-winning principal and shared with her how she had overcome the predictions of others because they felt it was important for her to know how much she had in common with the at-risk youth she championed through her administrative role. This story, a family legend, instilled in me the idea that much can be lost when we define students by one category, such as their disability or perceived deficits. Oh, but how much can be gained when we capitalize on our students' strengths! My mother went on to write award-winning grants, among many other accomplishments. All from the young woman who once upon a time was labeled as "not college material."

Chapter 1

Introduction

Differentiated learning is a tale as old as the one-room schoolhouse, built upon the needs of small communities (Cutler, 1989). As society and technology alike evolved, so did our understanding of the human mind and the processes of learning (Cash, 2017). In response, the demands upon the school for creating individuals ready to meet the entreatment of an ever-changing world grew exponentially (Goldin, 1999). From Horace Mann's (1839) revolutionary advocacy of a centralized school system, democratizing opportunities for education among the social classes, to Tomlinson's expansive work on equalizing opportunities for all students in the conventional classroom through differentiated learning, a walk through the history of our school system certainly proves the excogitational nature of education (Goldin, 1999; Tomlinson et al., 2003).

Examination of differentiation as instructional pedagogy throughout history lends itself to a strong indication of the ongoing and historical development of this approach in the classroom. The beginning traces of differentiation can be detected in the pragmatic nature encompassing the one-room schoolhouse (Cutler,1989). Upon the emergence of graded forms, a new demand was placed on teachers to meet divergent needs found in groupings based on chronological age. However, it wasn't until the mid-20th century that educational dialogue began to reach beyond the once practical nature of differentiation to its pedagogical potential within the self-contained classroom (Goldin, 1999). Currently,

as society embraces a more globally based economy, concerns regarding the ubiquitous inequities of a school system that still utilizes outdated structures are a call to action (Cash, 2017).

The ever-developing nature of education leads organically to the springboard of action research to measure and improve the impact of standards-based formative assessment and differentiated small group instruction on student achievement and to identify its impact on providing access to the curriculum for all students.

Significance of Study

Currently, trends within our school system contribute to an expansive divergence among learners (Banks, 2016; Howard, 2014). The historical and economical setting in which we currently are situated is a significant and influential factor in these trends. For example, as noted by Reardon and Portilla (2015), over the last 10 years a statistically significant increase occurred in the level of socioeconomic discrepancies among entry-level kindergarten students due to the period of economic recession that began in December of 2007 (Berkowitz, Moore, Astor, & Benbenishty, 2017; Musu-Gillette et al., 2017).

Reflective of the positive correlation between lower socioeconomic status and deficits in entry-level readiness skills, such as impulse regulation and cognitive domain characteristics, researchers detected a significant gap in achievement as children progressed through the educational system (Jacob & Parkinson, 2015; Reardon and Portilla, 2015). This growing disparity in readiness skills also underscores the timeliness of further discussion on the topic of differentiation in order to provide equity for all

students in addressing the specific challenges they bring (Birnie, 2015; Hendrick, 2012; Metropolitan Center for Urban Education, 2008).

The ever-widening gap in entry-level skills, as seen in the aforementioned trends, increases the need for diversified education within the walls of one classroom as educators seek to address the multiple intersectionalities they encounter (Aurwarter & Aruguete, 2008; Musu-Gillette et al., 2017; Reardon & Portilla, 2015). Although classrooms and instructional methods continue to progress and maintain pace with the globally based world our students can expect to enter, meeting the needs of a diverse array of learners remains a true challenge in the self-contained elementary school classroom (Pham, 2012). In *How to Differentiate Instruction in Mixed-Ability Classrooms*, Tomlinson (2001), a leading expert on differentiation, encouraged a return to a classroom that in some aspects resembles the procedures of a one-room schoolhouse, where both community and individual diversity, such as language development needs and giftedness, are explored.

Available literature on research-based instructional strategies demonstrates the importance of components of differentiation, such as distributed practice. This instructional strategy produces a sequence in which skills are not compartmentalized but are repeatedly revisited and synthesized with other skills (Marzano, Pickering, & Pollock, 2001). Additionally, research conducted by The National Research Council as far back as 1990 demonstrates the benefits of a classroom constructed for success through ongoing assessment and high learner engagement, both principles of a differentiated learning construct (Tomlinson, 2001). Revisiting concepts and ongoing formative assessment are

clearly endorsed through a fluid and flexible differentiation process and underscore the significance of this study.

At present, the district in which the research was conducted prefers 60% of student instruction in English language arts (ELA) to be done in small groups to encourage differentiated and targeted instruction based on the needs of learners. The current emphasis on small group instruction presents a challenge of how to group students effectively. For guided reading instruction, student reading levels based on district assessments currently prescribe group placement. In regards to specific skills and standards, many teachers rely on average of achievement groupings (AVAG), in which group formation is based upon overall grade point average (GPA) or perceived performance. Placement based on AVAG presents some concerns. The first concern of a placement based in AVAG methods is that they may produce stagnant groupings, which can create gaps in advanced students' learning by assuming they are advanced in all areas. Undetected deficits can create a snowball effect and produce gaps in students' learning that later affect their academic studies and pursuits (Reis, Baum, & Burke, 2014; Roach & Bell, 1989; Sharp & Clemmer, 2015; Townend, 2015).

An additional concern is that educators may assume that students who require extra support will need remedial activities in every skill. This assumption may prevent the opportunity to access higher-level thinking in areas they have mastered. Along the same line, it is especially true of the twice-exceptional subset, defined as students who are identified with giftedness combined with learning disabilities or other designation (Blackburn, Cornish, & Smith, 2016; Harry & Klingner, 2007). Twice-exceptional students are especially at risk for the deficit model, in which their disabilities become a

target for attention, while neglecting the giftedness of the child (Blackburn, Cornish, & Smith, 2016; Tomlinson et al., 2003; Ronksley-Pavia & Townsend, 2017). The consequences of stagnant grouping may reverberate throughout a student's career, and, without intervention, these students face the risk of falling through the cracks.

Diversity within our self-contained classrooms presents the unquestionable challenge of knowing how to best assemble the small groupings inherent to differentiated learning in a manner that best meets student needs in a targeted and strategic way. The inquiries contained within this study are designed to address the current dialogue surrounding these challenges and uncover best instructional practices within differentiation that meet learning goals for the 21st century.

Problem of Practice and Purpose of Study

This study seeks to identify the relationship between formative assessment measures for the structuring of fluid and flexible groupings and student achievement in language arts skills. The researcher identified the problem of practice (PoP) based upon the experience of structuring and delivering instruction to a linguistically and academically diverse population of students. Through conversations with colleagues, the researcher also came to understand that the challenge of implementing the differentiation process in an effective and achievable manner is a widespread concern with universal applications.

Another intent of this study is to initiate further conversation on optimal instructional practices within the process of differentiation. The researcher came to this process believing research is a contribution to continuing dialogue, intended to substantiate claims, uncover new truths, or address different ecological conditions.

The skill sets addressed are based on Common Core State Standards adopted and used in California. The teacher-researcher synthesized these skills into the context of the classroom structure in order to prevent curriculum splintering, as was seen in the individualized instruction. Seen in classrooms throughout the 1970s, individualized instruction sought to provide different curriculum to each and every child and presented major challenges in classroom management (Hattie, 2009; Tomlinson, 2001). In contrast, true differentiation seeks to identify "patterns of need" (Varla, 2010, par. 2) and attends to Vygotsky's zone of proximal development (Vygotsky, 1978), which balances the student's independent ability with their instructional level (Marzano, Pickering, & Pollock, 2001).

Over the last 19 years of teaching grades kindergarten through third, the teacher-researcher developed and implemented a system of differentiated learning using formative assessment in a fluid rubric format that sought to combine targeted academic instruction with teachers' knowledge of student background and state standards. With the advent of the common core state standards, the researcher then adjusted the rubric to meet the new requirements. The intent of the research contained in this study is to find the best way to implement differentiation in the classroom and identify teaching practices as situated in today's historical setting. The current research contained in this study is designed to uncover how such differentiation can best be applied to meet the needs of various subsets within the self-contained classroom.

Although many studies include discussions on the variations of students and the importance of differentiation in the classroom, current literature addressing the important questions about how to structure a framework that is teacher friendly and effective is

lacking. In searching for academic sources on this problem of practice, it proved difficult to find literature within the last 10 years that discussed the logistics of differentiation in the elementary classroom. Conversations with colleagues expressed the challenge of logistics as the one most likely to deter them from full implementation of a differentiated approach. In other words, a consensus about the benefits of differentiation exists in theory, but there is a lack of current resources in how to put the theory of differentiation into practice.

The rationale for this study is to explore practices that may reduce or close the existing achievement gap by documenting the impact standard-based formative assessment and flexible differentiated grouping has on student achievement in a second-grade classroom. Additionally, this study seeks to improve the implementation of differentiated learning in the self-contained classroom by uncovering efficient ways in which we address academic variances. The research contained within this study is meant to be an opening to a discourse and continuation of study on how best to implement differentiation.

In addition, while focusing on the academic and cognitive skill sets addressed through the differentiation process, the teacher-researcher kept in mind the impact these instructional practices have on the affective nature within the classroom (Pham, 2012). Both qualitative and quantitative tools implemented in the study attend to the affective domain of students and their experiences in small groupings. This data provided an additional perspective and explored the impact of differentiation on student affect and its influences academic achievement.

Problem of Practice Focus Question

The research seeks to address the overarching question: What are the measurable impacts, as indicated by student achievement and observed behavior, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction?

Additional questions explored in this research include:

- What observable impact does flexible grouping when based on the Rubric Baseline Scores have on student affect? Are there differences in student affect based on subset (English language learners and gifted/twice exceptional)?
- How are the needs of students who present as twice exceptional addressed using flexible groups identified by the rubric baseline scores (formative assessment)?
- How are the needs of English language learners addressed using flexible groups as identified by the rubric baseline scores (formative assessment)?

The teacher-researcher chose these questions for the focus of the study to address a gap in scholarly literature and to contribute to dialogue surrounding the way in which educators can meet the needs of a diverse population within the self-contained classroom. The current conversation on differentiation, including methods of grouping, must be based within the cultural and historical context and is specific to its demographic. Students enter the classroom with a spectrum of needs including students who are twice exceptional, identified as both learning disabled and gifted (Lawerence-Brown, 2004). Previous studies demonstrated that these students are more likely to be categorized by their disability, with a decided emphasis on reactive rather than on proactive strategies to address their challenges (Tomlinson et al., 2003; Ronksley-Pavia & Townsend, 2017).

Additionally, educators are charged with the task of addressing many contrasting needs within the classroom, including cultural influences. The practice of differentiation opens up opportunities to provide variation of activities provided within small group approaches that strategically meet these needs.

Study Design

Action research is known to provide a platform for addressing issues at the local setting with a researcher-within perspective (Efron & Ravid, 2013; Herr & Anderson, 2015). The mixed methods research design with a quasi-experimental approach, as employed in this study, supports the goals of action research (Mertler, 2017). This methodology requires both qualitative and quantitative data be collected, analyzed, and synthesized in order to address the research questions (Creamer, 2018; Creswell, 2013). The collection of both qualitative and quantitative data provides the unique opportunity to provide in-depth connections between the two types of data, which provides triangulation and a more complete understanding of the implications of the data in order to apply them to the local setting (Creamer, 2018; Creswell, 2013; Mertler, 2017). Mixed methods research is particularly appropriate in cases such as this, where the purpose of the research is to identify issues of equity and understand the impact of an intervention approach, such as flexible differentiation, on different subsets within the self-contained classroom (Creswell, 2013).

The researcher identified the mixed methods approach as the most appropriate methodology as it allowed for documenting the student-participants' academic achievement gains or losses in a systematic fashion, while allowing for the students' journey through the flexible differentiation process to be documented and gave

supporting evidence to the outcome of the study. This further supports the study's goal to identify how flexible differentiation can best support the needs of different subsets within the classroom. Although mixed methods research presents challenges, such as its time-consuming nature and sheer quantity of data, coupled with the additional step of triangulation, the researcher understood the quality and richness of information this provided in a study that analyzed the impact of an intervention strategy within the classroom (Creswell, 2013).

Historically, the mixed methods research design is relatively new, increasing in popularity in the 1980s and 1990s to address the demands of research in organizational leadership, education, and social sciences, as well as to address the complex nature of the health sciences (Creswell, 2013). Initially introduced in the 1950s under the name of mixed methods, it was not until the post-positivist demands of the late 20th century that it was more fully embraced (Maxwell, 2016). However, earlier references to combining both qualitative and quantitative data can be traced to the natural sciences as early as Galileo. It is most notably highlighted in the work of Dubois in the mid-19th century (Maxwell, 2016). Since then, many developments have occurred as mixed-methods has gone through a series of reviews, resulting in the development of quality indicators specific to mixed-methods research such as the one used in this study (Creamer, 2016). One such study done by Maxwell (2016), through a meta-analysis of studies throughout history that utilized the mixed-methods approach, uncovered that the two types of data analyses found in mixed-methods research to be consistently congruent, rather than exclusive.

The specific type of mixed methods action research used in this study is sequential explanatory with an embedded design of qualitative data providing a supportive element to the quantitative data (Creswell, 2013; Efron & Ravid, 2013). The research process proceeded in a sequential order, with quantitative data first collected during the pre-assessment, followed by semi-structured observations as the researcher conducted the small group sessions. At the end of the treatment cycle for each replication, a post-assessment was administered and analyzed in conjunction with the qualitative anecdotal observation records to triangulate findings and provide an understanding for patterns found in documented student behaviors and achievement gains or losses. Semi-structured post-interviews were conducted with selected students.

One convergent element existed throughout each treatment cycle, wherein the researcher recorded observed behaviors on a behavior tracking chart. The information from this tool was also used to help understand the students' experiences through the differentiation process. During the second replication, the researcher employed a more formalized process of recording the data through the use of a modified Differentiated Classroom Observation Scale (Cassaday et al., 2004). An additional quantitative survey method was administered through the use of a behavior affect questionnaire in a Likert scale format. This survey was administered weekly to the English language learner (ELL) and gifted, twice-exceptional, and academically talented subsets during the second portion of the research study.

A cross-sectional time frame allowed the research to be conducted within the time restrictions and a switching replications format improves external validity by allowing two groups of students to be blocked and matched and then compared (Herr & Anderson,

2015). The switching replications design was also intended to address the threats to validity presented by a sample that is primarily one of convenience (Seaman, 2014).

The within-subjects crossover design addressed a multiple measures threat to obtain validity because it allowed the researcher to ensure student improvement was not due to more than one period of instruction on the skill being measured. It also eliminated extraneous noise, such as the students' prior ability in a focus standard, by allowing the researcher to compare and contrast the same groups of students on two different standards or skill sets. Throughout this cross-sectional study, a researcher inside methodology was used to conduct mixed-methods research through the following methods: teacher-designed standardized rubric to assess student performance, student work samples, observations, and an analysis of student assessments of mastery (Herr & Anderson, 2015; Efron & Ravid, 2013). Student mastery was assessed through a standardized pre- and post-treatment assessment consisting of items aligned to students' skills related to the content standards. The pre- and post-assessment did not differ in the specific items, but the researcher identified the distance between the two and the fact that students did not see the outcome of the pre-assessment prevented this from creating a multiple measures threat. The study focused on the use of a teacher-based rubric system to identify student performance and group students according to their specific needs. The teacher-based rubric system used interval data from student samples, which then translated into ordinal rubric data. These samples included quick check assessments consisting of 12 items that tested the students' understanding of the skill. The items included on the assessments varied in level of difficulty to test the students' level of mastery on the skill. The rubric allows teacher expertise and assessment scores to be

integrated in order to effectively understand student performance. The use of the rubric and fluid coding system based on consistent operational definitions aligns with the theoretical framework of this research and allowed the student to be targeted at their zone of proximal development, with the goal of achieving the next level of achievement on each focus skill. Students received a second quick check assessment after the treatment was concluded to assess for increased mastery.

Ethical Considerations

The research contained within this study had little to no impact on the day-to-day structure of the participants' activities in the classroom. The procedures and instructional techniques were the same or similar to those employed since the beginning of the school year and therefore did not present a disruption to the students. The teacher-researcher remained committed to ensuring that all district requirements of curriculum were attended to and did not permit the research activities to detract from curricular goals as designated by the district.

In the process of employing a treatment and control group design, the researcher remained cognizant of addressing the ethical concern of withholding beneficial instructional strategies from students in the control group. This concern was unfounded as the control group reflected the way small groupings are traditionally approached within a self-contained elementary classroom. The district in which the study was conducted does not prescribe a specific method of grouping, as done in guided reading groups during Universal Access. The action research study provided a way to formalize processes of grouping already in place within the teacher-researcher's classroom and produce data that helped the researcher understand how the differentiation process met

the needs of different student subsets within the self-contained classroom. The study provided a low-risk opportunity for all students to engage in flexible differentiation, while being carefully monitored. Following each research portion, students' needs were identified and steps taken to assist any student who had not yet mastered the focus skill.

Positionality of Teacher Leadership

Positionality of any researcher, whether in traditional or active research projects, is an extremely important concept to conducting research that is valid and transferable. Action research, in particular, requires a self-reflective nature in order to achieve its goal of improving upon today's best practices, especially in a post-positivist paradigm, where all theories should be under scrutiny to ascertain if they are not in fact contributing to a challenge within our instruction (Herr & Anderson, 2015).

Reflecting the locus from which one views the world, positionality encompasses a multidimensional role in the research design process, as every individual is comprised of several subsets of culture. In addition, an individual's point of view may prove subjective based upon his relation to the topic of study and the measurable stakes at hand.

Within each individual lies an intrinsic multiculturalism as unique as a fingerprint (Banks, 2016; Howard, 2003). These subsets that overlap combine to define our perspectives and positionality. Acknowledging the importance of rigor and the influence of positionality on the validity of the researcher's study, it became absolutely foundational for the researcher to reflect upon how the combination of her own learning preferences, experiences, and personal heritage interact with the research in a study that is credible (Banks, 2016; Howard, 2003; Metzler, 2017.)

The researcher remained aware of personal preferences for hands on and musical learning and how that often influences the teaching structure within the classroom. Using flexible grouping leads naturally to drawing upon learner preferences and ensures quality application of the differentiated process for all students.

By remaining cognizant of specific life experiences, the researcher maintained awareness of the particular interest they held in improving learning for the subset of twice-exceptional learners. The goal of discovering how the relationship between formative assessment that is fluid can in turn provide more dynamic and targeted learning for the entire spectrum of students continued to be the focus of the study. In doing so, the researcher remained committed to avoid the stagnant trap she sought to undermine. More clearly stated, this means the researcher metacognitively practiced a willingness to identify which groups benefited most and recognizing those subsets for which it might not work. True to the ever-developing and flexible nature of action research, the teacher-researcher remained open to exploring different adaptations of the instructional methods in order to truly make this study address the needs of all learners. The teacher-researcher recorded these shifts in procedures, processes, and instructional methods through daily journal entries that described the journey of this action research study.

In regards to the researcher's professional experience, as an educator of nearly 20 years teaching grades kindergarten through third, she has developed her own variation of differentiated formative assessment in a fluid rubric format based upon anecdotal observations, student samples, and experiences as a teacher. As discussed earlier, the goal of the research was to uncover best instructional practices for students. The researcher committed to remaining cognizant of the possible bias in favor of the intervention method

and took great effort to balance personal views in order to achieve the goal of identifying what is truly best for her students.

In order to address issues of positionality and bias, the researcher implemented peer review as a form of polyangulation (Metzler, 2017). This process also served as a form of inquiry support in which the teacher-researcher talked through discoveries during the course of the research (Dana &Yendol-Hoppey, 2014). The teacher-researcher's jobshare partner, having the unique quality of knowing the students as well as the researcher, also provided a sounding-board.

A component of this study was to analyze how using fluid formative assessment can in turn provide more dynamic and targeted learning for the entire spectrum of learners, including those who find themselves excluded from subsets due to their language acquisition or accessibility to the curriculum based upon cultural rift (Allen, Robbins, Payne, & Brown, 2016). The researcher desired to build a classroom that honored diversity of mind and culture, instead of only rewarding the conformity that is typically characterized as gifted by the American school system (Souto-Manning, 2016a). Critical reflection is vital to acknowledge how "who we are" (Howard, 2003) can indeed govern the outcomes of our students.

Sampling Process

The sample was composed of what the researcher termed as a "stratified" convenience sample due to the fact that the unit of analysis was carefully balanced by a panel of their prior teachers based on academics, behavior, parent involvement, and gender. Further, the researcher placed the sample population in two groups based upon factors such as academic achievement, English language learner status (ELL), race, gifted

indicators, and male and female. This process is also identified as a block and match grouping procedure (Seaman, 2014). The first group was the Control Group and was placed in stagnant low, medium, and high groupings based upon their average of achievement (AVAG) scores, also referred to as grade point average (GPA). The GPA was determined through an average of their language arts grades from in-class assignments in the areas of language, writing, and reading. The treatment group was given the intervention treatment of fluid differentiation based upon their rubric scores in the focus standard or skill set lesson.

Using the method of coding, a rubric was developed giving operational definitions for the categories that follow in each of the two standards: 1 = Below Grade Level in Standard; 2 = Approaching Grade Level in Standard; 3 = Grade Level Mastery of Standard; 4 = Above Grade Level in Standard. These ordinal values, found on the rubric presented in Appendix B, represent specific qualities of mastery as demonstrated by the child. The operational definitions specified which observed behaviors represented each level of mastery. This process was repeated for both focus standards in the study. The operational definitions of what qualifies for each level within each standard went through a validity screening from a panel consisting of administrators and second grade teachers from our school site. This process provided face validity.

Student artifacts and work samples allowed the researcher to follow the student's line of thinking. Moreover, adjusting a student's group placement based on a particular standard once the teacher observes mastery provided an important contribution to the fluid format of this instructional technique. As indicated by Tomlinson (2001), flexible grouping must be present in order to indicate true differentiation has occurred.

Two second-grade language arts standards from the Common Core State Standards comprised the focus of this study. The selection of these standards was achieved by consulting a panel of second-grade teachers at Sunrise Elementary School, the public school where this study was conducted. The teacher-researcher asked a panel of second-grade teachers to recommend two language arts standards they believed were core to the second-grade curriculum and to success in future grade levels. Each teacher recommended a standard from both the categories of reading and language. Further, the recommendations by the panel of second-grade teachers were triangulated by a panel of third-grade teachers and two administrators at Sunrise Elementary School. The teacher-researcher asked them to review the suggested key standards and make recommendations based upon which standards transferred over into third grade. Each third-grade teacher and administrator selected one standard from both reading and language.

The first core standard selected as a focus skill is found in the California Common Core State Standards under the language section and is referenced by its identification Code L2.1. The standard states the students will "demonstrate command of conventions of English grammar when writing…" (August et al., 2017, p. CACCSS21). Several sub-strand standards lie under this category. For the purpose of this research, it was necessary to delimit to one of these sub-strands. In order to achieve this, the researcher reviewed the scope and sequence of the language arts curriculum, Wonders California by McGraw Hill (August et al., 2017), from kindergarten through sixth grade and found the sub-strands are covered equally among the grade levels. Therefore, with all things being equal, the researcher selected the sub-strand L2.1e, which states students will be able to "form and

use the past tense of frequently occurring irregular verbs (e.g., sat, hid, told)" (August et al., 2017, p. CACCSS21).

The second core standard was also found in the California Common Core State Standards and is found in the reading informational text section and is referenced by its identification code RI 2.5. It states that students will "know and use various text features (captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently" (August et al., 2017 p. CACCSS7). Initially, among the teachers surveyed, there was a tie between this standard and RL.2.1, which states students will be able to "ask and answer questions such as who, what, where, why, and how to demonstrate understanding of key details in text" (August et al., 2017, p. CACCSS6).

In order to select between the two tied standards, the researcher once again consulted the kindergarten through sixth-grade scope and sequence in Wonders California (August et al., p. CACCSS6). RL.2.1 is covered starting in kindergarten and every year following. RI.2.5 is covered starting in first grade and every year following that. The researcher selected RI.2.5 as it best prepares students for the upcoming transition from learning to read to being a student that can proficiently read to learn.

Both the treatment and control groups received instruction in the same standard, delivered in a small group setting for a total of seven days over the course of four weeks. Treatment and control groups were blended for the purpose of instruction in order to prevent any bias in recording of the data. During the small group sessions, no differentiation was made between participants as related to their status of treatment or control group. However, the control group used GPA and overall academic performance

to determine their placement and remained stagnant, whereas the treatment group used the level identified by the teacher-based rubric, which remained flexible throughout each replication. These small group sessions contained approximately 10 minutes of intensive and targeted “bite sized” instruction. Both groups also received equivalent direct instruction in their focus standard.

Theory of Inquiry

Components of Dewey’s theory of inquiry (1939) provided the foundation for the conceptual framework of this research study. Dewey (1939) posited the importance of creating clarity of abstract concepts through the use of coding symbols. Formalizing processes into more concrete terms is a main goal of action research and connects to the purpose of action research (Creamer, 2018; Efron & Ravid, 2013) Through the use of these symbols, the researcher provided a link between the existential quality of observations by their translation into symbols that carry operational definition (Dewey, 1939). This formed the foundation for the process of developing and implementing the teacher-based rubric in the classroom.

Much like the cyclical nature of the action research cycle, Dewey’s theory also emphasizes the interim nature of these observations as proposed ideas (Merriam & Tisdell, 2016). Dewey’s theory of inquiry (1939) provides a platform to acknowledge the connection between the participants in a mixed methods inquiry and their environment as being significantly affected by their ecological and historical context (Dewey, 1939), which is supported by a descriptive data set of anecdotal records (Merriam & Tisdell, 2016).

Dewey's theory of inquiry (1939) aligns with action research, the selected method of research for this study, based on the reflective core component that permits the teacher-researcher to reconsider best teaching practices (Efron & Ravid, 2013). By nature, action research is a study "within" (Herr & Anderson, 2016), consisting of the teacher practitioner as a researcher (Efron & Ravid, 2013).

In contrast, traditional research tends to lend itself to an external research process, in which an objective and removed observer stands in the role of researcher, thus leading to a distinctiveness between theory and practice. However, the two methodologies cannot be singularly isolated from each other, as they are interwoven in the connection of theory to the real-time environment of practice (Efron & Ravid, 2013). Action researchers are reliant upon traditional researchers who have gone before them in creating a foundation of sound theory upon which dynamic inquiry can be structured and implemented.

As identified earlier in this chapter, a chasm exists between theory and the practical implementation of differentiation (Bentz, 2014), including methods of how to group students. Action research is a preferred method in order to investigate an area in which a researcher desires to identify potential benefits of an intervention or instructional practice (Creswell, 2013). Additionally, action research is conducive to a mixed methods approach (Efron and Ravid, 2013) because it allows the researcher to draw from a rich set of descriptive data to give depth to the qualitative measures.

The mixed methods approach allowed the researcher to explore multiple aspects of the problem, including student affect and student achievement and how that combined with providing curriculum accessibility to students of all intersectionalities. For example, quantitative results were needed in order to demonstrate a positive, negative, or null

correlation between small groups formulated by different means of formative assessment and student achievement. The researcher expanded upon this component to analyze the data to identify if one subset of students benefited more from specific types of formative assessment.

Student data were translated into quantitative scores. The rubric used to identify student progress was based on specific qualities identified within the student samples. The combination of strategies from qualitative and quantitative methodologies allowed for a stronger correlation between relationships and richer set of data to be achieved and shared (Creswell, 2013; Creamer, 2018; Jones, 2015).

Contextual considerations for the methodologies described within this research plan include the dynamics within the community of teacher practitioners. Several new programs have been brought into the district to help align with the Common Core State Standards, in addition to an entirely new curriculum. As discussed in Herr and Anderson (2015), naturalistic generalization is best suited for the research of an insider, one who is experiencing the same dynamics as those to whom the research may be generalized. This can be particularly useful in times of great transition, as has been seen recently within the district in which the study took place.

Research attending to the implementation of differentiation done by Tomlinson (1999) advocated for continuity in the way differentiated learning was presented to teachers while still allowing teacher intuition and creativity to play a role in the process (Huebner, 2010). In addition to Tomlinson's various contributions, research studies such as Baumgartner et al. (2003) indicated that differentiated instruction improved not only decoding skills but also the child’s ability to comprehend text (Huebner, 2010).

Lawerence-Brown (2004) focused on the potential for differentiation to meet the various needs of students, including gifted students and those categorized as having learning disabilities. These incorporated elements of the three-level planning pyramid developed by Vaughn, Bos, and Schumm (2000) in which they distinguish between what is essential learning and what is meant for students who present with additional interest and ability, known as degrees of learning (McKlesky & Waldron, 2000).

A series of meta-analysis on within-class grouping conducted by Kulik and Kulik in 1992 (as cited in Hattie, 2009), demonstrated a small but positive effect on student learning in ability-based groupings within the self-contained classroom. This study showed within-class grouping produced slightly higher benefit for advanced learners as opposed to proficient and below-level students (Hattie, 2009). Another example can be found in the meta-analysis conducted in 1996 by Lou et al., which produced evidence of the benefits for students who received instruction in within-class small groupings as opposed to those who only received whole class instruction (Hattie, 2009). These studies, among others, provide a foundation and theoretical background for the current research.

Delimitations and Limitations of the Study

The research focused on one of many pedagogical questions related to the differentiation of learning and is seen as a contribution to the ever-evolving conversation of this instructional technique. In order to make the study achievable, the researcher delimited the focus to language arts, specifically two key language arts standards of the Common Core Curriculum. However, there was no reason to think these findings could not be adapted and applied to other standards within language arts or even a mathematics

curriculum. Further studies and replications regarding this ecological threat to transferability would need to be conducted.

Meeting the needs of a diverse spectrum of learners is a top consideration of education that seeks to achieve equity for all students. Although the transferability of this specific study might be limited to certain populations and replication is needed in order to enhance the external validity of the study, valuable contributions to our thoughts and processes of differentiation can be gleaned and increase the scaffold of understanding in the area of differentiation. As teachers are increasingly encouraged to do more of their instruction in small groups, the question of how to logistically and pedagogically make it the most meaningful and constructive experience for students is timely and relevant.

As discussed in the description of the sample, there are certain limitations, particularly in the transferability of this study. These results will hold specific for the unique disposition of students in the sample, including their grade level, age and level of maturation, and demographical characteristics. Additionally, a sample size of 22 students provides small group sizes for each category addressed within the research, limiting the transferability of these findings outside the teacher-researcher's own classroom. In order to strengthen both dialogic and democratic validity, the Common Core State Standards focus skills were selected after collaborating with personnel within the district. This triangulation produces a highly contextual and ecological transferability based on traits specific to the district in which the study took place.

Organization of Study

Chapter 2 presents the theoretical framework and grounds the study in scholarly literature as well as connects foundational concepts to the instructional practice of

differentiation. Chapter 3 continues with an overview of the study and an in-depth discussion of design, materials, scoring, and procedural application. Characteristic description of participants and how they were grouped are discussed as well. Chapter 4 presents the results and includes a discussion of the analysis of the scoring, coding of qualitative data, and comparative data between groups. Along with sharing the qualitative data in narrative format, frequency distributions are provided in order to display the quantitative data. Chapter 5 contains a summary of the research and conclusions based upon the outcomes of the study. Connections are made back to the theoretical framework and applications for the classroom setting. Questions requiring further study and possible replications are suggested. In order to provide more construct and internal validity, samples of the assessments used for each key standard are provided in the Appendix. The list of references follows the Appendix.

Summary

The purpose of this study is to determine the impact of formative assessments and fluid grouping situated within differentiated learning on academic achievement in a self-contained second grade classroom. The significance of the study is determined by the present historical and ecological conditions within the school and local district where the study was conducted compounded by a chasm in the current literature available on this topic. It is intended to further the dialogue on differentiation and lead to further studies and replications.

A researcher-within action research methodology was employed during this mixed methods approach. A mixed methods approach of sequential explanatory with qualitative as embedded, provided the appropriate method for giving a complete picture

of the impact of flexible differentiation on the achievement and affective qualities of student within an elementary self-contained classroom. The qualitative component blended narrative inquiry methods and axial coding methods to provide triangulation. Qualitative data is provided through the use of semi-structured interviews and anecdotal records. The quantitative component is quasi-experimental and employs a switching replications and a within-subjects cross-over design to help address matters of validity. An element of survey design blends in to the above design to provide further triangulation of the data. The quantitative and qualitative data are interwoven in order to present rich description of the findings.

Definition of Terms

Average of achievement groupings (AVAG): use of overall GPA or perceived performance to identify placements in small groups, usually stagnant, as compared to standard based groupings that identify where each individual student is on each standard for targeted learning. The teacher-researcher coined this term for the current research.

Bloom's taxonomy: a descriptive hierarchy referring to depth of knowledge and processing elaboration in learning tasks. Differentiated learning allows the opportunity for scaffolding in the complexity of tasks in any given standard based upon the student's mastery of the standard (Bloom, 1956; Furst, 1981).

Depth of knowledge (DOK): extensions of the taxonomies presented by Benjamin Bloom and his colleagues during the mid-20th century (Furst, 1981; Hess, Jones, Carlock, & Walkup, 2009).

English language learner (ELL): for the purpose of this study, students identified with a language learning status within the district.

Fluid grouping: grouping that changes based upon the standard being addressed and each individual's achievement in the standard being taught.

Language of the discipline (LOD): The concept of language of the discipline is one that encompasses both that of academic language and nuances of language of micro and macro cultures within a community of practice or culture, such as a classroom environment.

Quick check assessment: provides information on how the student is performing on that standard in the most authentic way possible.

Rubric: a guideline that communicates expectations for different levels of mastery of learning.

Rubric baseline score (RBS): the student's baseline (pre-assessment) rubric scores.

Rubric outcome score (ROS): an average of the student's outcome score based on his/her post-assessment.

Standard-based formative assessment: a diagnostic and ongoing form of measuring students' conceptual understanding and application of learning in real time, each student is measured individually on each learning standard or criteria.

Twice exceptional: a categorization of a student based upon dual identification as presenting with a learning or developmental disability in conjunction with being gifted and/or RSP students with higher level IQ scores. The HOPE scale (Gentry et al., 2015) may also be implemented to identify students who are not RSP, but present with such disorders as ADHD and gifted characteristics. *p*-Values or correlation coefficients are provided to underscore concurrent validity.

Vygotsky's zone of proximal development: a theory developed by Russian psychologist, Lev Vygotsky (1978), representative of the range of instructional learning based upon the difference between the level at which a learner can perform independently and the level at which the learner requires support in order to perform a task. The concept put forth through this theory is foundational to the process of differentiation and instructional decisions within small group learning.

Chapter 2

Flexible Differentiation: A Theoretical and Historical Perspective

This study seeks to examine the pedagogical foundation of formative assessment and its connection with a flexible differentiation process in the self-contained classroom. Additionally, the intent of the research is to establish the relationship between differentiated instructional processes and student achievement amongst a diverse student population. The purpose of such a study is directed toward the goal of further contributing to the current conversation on differentiation and how educators can decrease achievement gaps amongst diverse student subsets. In order to achieve this goal, teaching-practitioners must consider the various subsets served within the self-contained classroom.

Current trends within the educational system, along with recent economic factors, have produced increasing diversity among students within self-contained elementary classrooms (Tomlinson, 2003; Portilla & Reardon, 2015). Studies such as those conducted by the National Center for Educational Statistics (Musu-Gillette et al., 2017) and the National Assessment for Educational Progress (NAEP) (Bohrnstedt et al., 2015) have demonstrated the ongoing academic challenges experienced by students with cultural and linguistic diversity. Within this trend lies several contributing factors including subjective judgments made in regard to students' abilities based on a deficit model in which students of diverse cultural and linguistic backgrounds are compared to a

hegemonic normative (Howard, 2013). The current research aims to provide more objective systems of identifying student deficits and strengths based on academic standards rather than perceived deficiencies.

Shifts in curriculum due to the implementation of Common Core, a national education initiative that specifies standards for students in kindergarten through Grade 12 in the United States, have collided with demands for educational practices that prepare students for a globally situated workforce. These parallel influences place an ever-growing list of demands on the ways teachers efficiently use their instructional minutes within the classroom (Stewart, 2012).

Identification of Research Questions

The following questions have been identified for this research study:

Primary Research Question: What are the measurable impacts, as indicated by student achievement and observed behavior, of a standard based formative assessment and fluid grouping approach when used in differentiated group instruction?

- What observable impact does flexible grouping when based on the Rubric Baseline Scores have on student affect? Are there differences in student affect based on subset (English language learners and gifted/twice exceptional)?
- How are the needs of diverse subsets of students addressed using flexible groups identified by the rubric baseline scores (formative assessment)? Do any subsets show increased benefits as opposed to others?
- How are the needs of students who present as twice-exceptional addressed using flexible groups identified by the rubric baseline scores (formative assessment)?

- How are the needs of English language learners addressed using flexible groups as identified by the rubric baseline scores (formative assessment)?

The remainder of this chapter will briefly describe the curricular and theoretical underpinnings of flexible differentiation and review historical and ecological perspectives that have guided its development. Following this synopsis, differentiation will be discussed as it applies to equity in the current model of education by emphasizing the objective traits of formative assessment as applied in the rubric model. The characteristics of flexible differentiation, along with prior research on the effect it has on different subsets within the self-contained classroom, will be discussed. The chapter will conclude with a discussion of the benefits, criticisms, and challenges of differentiation in the self-contained classroom.

Purpose of the Review

A literature review serves as the foundation of a research project as it develops. It simultaneously provides a road map and scaffolding for the study as the researcher constructs a process grounded in current research. A well-constructed literature review also provides insight into current gaps within the literature and highlights areas in which more dialogue is needed based upon ever-developing historical and socioeconomic trends, educational theory, and other peer-reviewed research (Herr & Anderson, 2015; Merriam & Tisdell, 2016). A strong literature review follows a sustainable trajectory of logic, which provides basis for the claims (Machi & McEvoy, 2016, p. 42).

The researcher must look through a lens of critical reflection to find any pervasive injustice that may exist within our school system (Herr & Anderson, 2015). Research becomes a powerful mechanism for seeking equity-based practices within school systems,

as the very act of education can be interpreted as inherently political (Schiro, 2016). Herr and Anderson (2015) compared it to an "unearthing of the real issues or questions for study" (p. 105), which creates a form of research metamorphosis throughout the literature review process. Through the construction of the literature review contained in this study, the researcher sought to establish "patterns of evidence" (Machi & McEvoy, 2016, p. 84). The identification of repetitive themes within the literature allowed the researcher to establish overlap among studies, which was used to increase validity and reinforce the information presented. Particular ideologies, curricular trends, and educational theorists were selected for discussion based on their contribution to the historical or ecological establishment that surrounds the underpinnings of differentiation as a construct.

By searching databases, including EBSCO, ERIC, and Google Scholar, the researcher located both books and articles with the specific intent of finding peer reviewed research, meta-analyses, and ethnographic studies to shed light on cultural and linguistic diversity, and other resources recommended by trusted advisors in the field of education. The literature was scanned for such criteria as similar ecological factors and historical setting. When it was found that some areas were lacking in studies containing similar circumstances, the researcher focused on applicable information that had been attained through the available studies. Every effort was made to find the most contemporary literature, produced within the last six years. Some exceptions were made when an article was found to have historical relevancy, major significant findings, or when applicable literature surrounding a specific topic was limited.

Curricular and Theoretical Underpinnings

Whether born of pragmatic necessity or carefully constructed based on a teaching practitioner's understanding of the diverse needs within the four walls of a classroom, it is important to be mindful of the various influences that guide differentiation in today's classroom (Cutler, 1989). Previous theoretical research provides a firm sounding board from which a practitioner can cross check for best differentiation practices in the classroom (Merriam & Tisdell, 2016; Herr & Anderson, 2015). With this in mind, the researcher reviewed major theoretical and curricular foundations that have facilitated and influenced the development of contemporary differentiation in the field of education.

An important challenge of theoretical research is the divide between the theory and the practical application (Janssen et al., 2015). This framework aims to connect the theoretical outline and give it life and breath within the four walls of a classroom as it pertains to differentiation. In order to make this connection, this chapter first reviews the agendas and objectives of differentiation and reviews the major theoretical underpinnings of flexible differentiation including the social efficiency model (Popham, 2017), learner-centered model (Dewey, 2017), communities of practice theory (Lave & Wegner, 1991), taxonomy of cognitive and affective domains (Bloom, 1956), and Vygotsky's zone of proximal development (Vygotsky, 1978). The methodology contained inside this study contributes to viable applications of these theories that support differentiation through its action research nature in a school setting.

Agendas and Objectives of Differentiation

Differentiation encompasses many different agendas aside from addressing specific academic tasks, including learning preferences of students (Pham, 2012;

Tomlinson, 2014). For the purposes of this study, this framework will touch briefly on research addressing the topic of learning styles but will mainly focus on the academic intensity differentiation can provide within the self-contained classroom.

Additionally, differentiation is challenged by a variety of competing objectives, which contribute to the confusion of teaching practitioners, those most critical to the delivery of such a system. Pham (2012) warned that by indiscriminate employment of instructional techniques within the differentiation model, negative effects, such as fractured delivery of instruction, may occur. Instead, Pham (2012) encouraged teachers to utilize methodical means by which to accommodate learners in their academic task and demonstrates that differentiation based on learner interests is less effective. The rubric-based model of differentiation developed in this study aligns itself with this systematic goal and adheres to what Gagne, Briggs, and Wager (1992) promoted as "criterion-referenced" (p. 16), which creates a linear way of identifying the achievement of students in specified objectives and is based on observable outcomes (Popham, 2017; Schiro, 2013).

Influences of the Social Efficiency Model

Differentiation as an instructional model draws upon tenets of the social efficiency ideology, which emphasizes a utilitarian focus in connection to what a student needs to learn to be a successful adult (Fallace & Fantozzie, 2017; Schiro, 2013). As viewed through the Deweyan lens, social efficiency emphasizes democracy within instruction and situates education as a form of social action to ensure students are provided with equity-based access to their education (Fallace & Fantozzie, 2017). From this perspective, the procedures embedded within the differentiated model employ

analytical means to determine the academic needs of students. An analytical process ensures each student receives the instruction warranted. Systematic procedures such as analytical measures identify and alleviate fractures in student learning based on what has been established as required skills for academic achievement. At this point, the way in which the application of social efficiency departs from a "social control" (Fallace & Fantozzie, 2017, p. 85) and becomes the social action promoted by Dewey becomes clear. An atomistic paradigm is blended into the differentiated model to support the scaffolding necessary to identify a student's individual gaps in prerequisite skills (Schiro, 2013; Tyler, 2017). Through these processes of assessment, grade-level objectives are measured and then addressed within the context of fluid small group structures (Schiro, 2013).

Despite the objectivity promoted within the social efficiency model, a subtle blend of intuitive reflection can be synthesized to balance the effect learning conditions, both internal and external, have on the learning outcome. Gagne (1970), an educational psychologist who described nine events of instruction that must be in place for successful learning to be achieved, saw the teacher practitioner as the orchestrator of the learning environment (Driscoll, 2005; Schiro, 2013). This careful deliberation includes reflection on internal and external stimuli surrounding a student's readiness, which allows the teacher practitioner to respond to the needs of the student (Gagne, 1970; Gagne, Briggs, & Wager, 1992). Tasks such as identifying the internal and external conditions affecting student learning suggest the use of teacher intuition, a most unscientific method but one that, when blended appropriately with objective methods, unites to provide the student with targeted instruction (Gagne et al., 1992).

Influences of Learner-Centered Ideology

The learner-centered ideology, in which student needs are the deciding factor for the direction of curriculum, has subtle influences on differentiation that are worth noting (Dewey, 2017; Schiro, 2013). Primarily, these influences can be seen in the capacity of the differentiation model to provide extensions and reinforcements prompted by the strengths and weaknesses of the students, rather than dictated by rote curriculum. This perspective situates learning as an ongoing "process of living" (Dewey, 2017, p. 35), in which students are permitted to have metacognitive involvement in education. Such extensions provide an opportunity to also incorporate culturally and academically responsive activities and materials that engage the student holistically, which honors both the social and academic needs of children (Adaams, 2017; Dewey, 2017; Tomlinson, 2014). Additionally, the activities offered to other children in the classroom while the teacher conducts small group structures provide for fluid movement through enterprises that underline important concepts, allowing children to pursue activities which stimulate their particular interest (Dewey, 2017; Schiro, 2013; Tomlinson, 2014).

Classroom management during small group structures is promoted by creating a classroom culture in which the teacher is the facilitator. The students are taught to preserve the structures of the classroom through student ownership of the procedures and personal responsibility (Schiro, 2013). Although not directly related to the formative assessment component studied in this research, the innateness of such structures within the differentiation model lends itself to learner-centered tendencies (Schiro, 2013).

Influences of Community of Practice Theory

Embedded within small group differentiation is the ability to build a community of practice through the establishment of a classroom culture (Lave & Wegner, 1991; Vygotsky, 1978). Structures and procedures found within communal practices have been shown to promote language interaction and peer-to-peer reciprocity, increasing the accessibility of language acquisition for linguistically diverse students, such as in the ethnographic study completed by Toohey and Day (1999). It is through enculturation that a child develops a sense of self in relation to others, and it is through pure and unabridged experience of applying the tools of learning in interactive ways that the learner takes ownership of the concepts presented through instruction (Brown, Collins, & Daguid, 1989; Wegner, 2010).

Despite its abstract presence, the process of enculturation in the early years of a child's school career as found in a community of practice sets the stage for preparing them for future academic endeavors, thus making this task a priority (Price, 2003). This "landscape of practice" (Wegner, 2010, p. 4) provides the background for shaping an understanding of learning as a construct.

Flexible differentiation, in which groupings are not stagnant and allow fluidity in the way students are grouped according to need, also furnishes the unique opportunity to create micro communities within the classroom where similar areas of concern and strength are attended (Kapucu, 2012). A decreased student-to-teacher ratio as allowed in differentiated small grouping also provides for higher engagement of students, more peer interaction, and increased opportunities for observation of student development (Kapucu, 2012; Wenger, 2010).

Communities of practice structures provide the framework for the teacher to take on the role of facilitator within flexible differentiation. Identifying learning needs and providing the environment in which differentiation can flourish are important factors encompassed by the role of the teaching practitioner (Kapucu, 2012). Additionally, the teacher must also take care to provide the necessary modeling and fading of scaffolds, which synthesizes the community of practice structure with that of cognitive apprenticeship and further supports the role of the teacher as facilitator (Brown, Collins, & Daguid, 1989).

Legitimate peripheral participation. A component of the process in which those new to a learning community absorb the culture and procedures of their new environment, legitimate peripheral participation is primary to the community of practice environment and inherent to the structures of differentiation. This concept encompasses the importance of providing a safe space for newcomers to explore and initiate themselves into a new community, whether it be a student who is new to the English language or one who is simply new to the classroom. Providing students with a feeling of security in the learning environment is of significance, specifically for those who are linguistically diverse, such as the ELL population (Price, 2003; Toohey & Day, 1999). Of particular importance in primary grades, collaborative features of a community style of learning foster growth of academic language, an important element for ELL students, by providing authentic opportunities in which students may experience vocabulary through trial and error (Haneda, 2006). By embedding the language of the discipline within authentic tasks, educators acknowledge the development of language as inevitably linked to the context in

which it is applicable (Brown, Collins, & Daguid, 1989; Price, 2003; Toohey & Day, 1999).

Language of the discipline (LOD). The concept of LOD is one that encompasses academic language and nuances of language of micro and macro cultures within a community of practice or culture, such as a classroom environment. Both academic and cultural language poses complexities that may baffle a newcomer to the group (Nagy & Townsend, 2012). For students who are charged with the additional task of learning English alongside their academic subjects, the academic language that pertains to learning language arts and reading skills, such as grammatical terms and characteristics of text features, proves to be a challenge (Nagy & Townsend, 2012; Shleppegrell, 2012). The ability of a student to acquire the LOD in both academic and cultural contexts within a classroom has been shown to significantly impact their accessibility to the curriculum and therefore present an important component for the ELL subset of students (Ernst-Slavit & Mason, 2011; Shleppegrell, 2012).

Influences of the Cognitive and Affective Domain Taxonomy

Differentiation may be viewed as a means to address a multitude of agendas, including the cognitive and affective domains of learning, as defined by Bloom (1956). This research study focuses on the cognitive domain by emphasizing rigorous academic standards, while attending to the affective domain to monitor students' emotional connection to the learning process. In recent years, the taxonomy of learning objectives developed by Bloom have been revised in order to meet the demand for globally based skills for the 21st-century learner (Hattie, 2009). Some have criticized Bloom's taxonomy as diverting important attention away from the rigors of skill-based learning and argue

that higher level thinking cannot take place singularly without connection to foundational skills and content (Booker, 2008).

In response to this, the educational field synthesized Webb's depth of knowledge (DOK) model with Bloom's taxonomy to strengthen and provide an extension to the descriptive cognitive categories provided by Bloom. The levels presented by Webb's model of DOK call for an alignment in the way skills are assessed and the depth at which we desire students to know the material (Hess, Jones, Carlock, & Walkup, 2009).

These arguments provide a platform for further investigation into the connection between differentiation and its impact on the cognitive and affective domains of learning and the way in which they intertwine. The effectiveness of the two domains presented in Bloom's taxonomy is important to consider in a differentiated model that is focused on rigorous and targeted skill-based learning and in a study that concerns itself with both the cognitive and affective response of students in their small group structures. The flexible differentiation model employed in this research study responds to this concern by viewing skills, both knowledge and evaluative in nature, in an atomic way, providing the opportunity to recognize which skills may act as a prerequisite to others (Popham, 2017; Schiro, 2013).

For example, a student may need to more fully develop knowledge-based skills, such as the use of transition phrases, before they can be expected to synthesize or fully evaluate information, therefore applying Bloom's taxonomy to provide a road map for learning is an important consideration (Popham, 2017). The purpose of the flexible differentiated model is not to aim only for the highest level of learning but to recognize and address when some of the lower level building blocks are not present and to allow

students to proceed to a higher level of understanding. In this way, the narrative is changed from saying a student can't or won't to she is not ready.

Influences of Vygotsky's Zone of Proximal Development

As asserted earlier, the consideration of a child's readiness level at which they enter is critical to the success of a differentiated program. Both prerequisite skills that are lacking and the level at which a child is already performing on a skill must be ascertained prior to determining what supports or enrichments a child may need.

Although the current school system divides students based on chronological age, it is recognized, as put forth by Vygotsky (1978), that developmental readiness for a skill or mastery of prerequisite skills may differ from student to student (Tomlinson, 2014). In his hallmark work, *Mind in Society*, Vygotsky (1978) constructed the theory of the zone of proximal development, in which he differentiates between tasks a learner can complete independently and those he may complete with guidance from an instructor, and how this may vary by student and task. Immediately, it is clear a child's readiness from one task to another is a complicated matter. It is easy to understand how capitalizing the names of proper nouns is a different function than extracting evidence from a text. Yet all too often, children are leveled according to their overall achievement in the category of language arts, the category under which these two skills both fall. These concerns, which are aggravated through stagnant grouping, support an investigation into how a more fluid approach of differentiation may alleviate them.

Historical and Ecological Perspectives

Historical influences, socioeconomic trends, and sociocultural influences are important factors to consider in the way differentiation has been shaped (Cutler, 1989;

Musu-Gillette, et al., 2017.) Together, these three forces have contributed to the path of differentiation.

Historical Influences

Although differentiation has been an instructional buzz word for only a handful of decades, it can be found throughout the formative years of America's education system, most notably in the one-room school house (Cutler, 1989). The early ancestor of today's differentiation was often born from the ecological factors that presented in small town one-room school houses, composed of students of many different ages and grade levels within one room and only one teacher to manage these demands. The advent of the self-contained classroom, in which students were segregated by chronological age, can be traced back to mid-19th-century Boston. Soon after, districts across the country followed suit (Cutler, 1989). By the 1950s, evidence of differentiation can be found in scholarly articles of the time period, in which a "three track system" (Parker & Russell, 1953, p. 169) is discussed as a method of meeting the academic diversity in the classroom.

In many ways, the purposes behind differentiation remain largely unchanged from what they were in the one-room school house. Teachers today, as in the prairie-based school houses of yore, seek to meet the variety of needs contained within the four walls of a self-contained classroom (Birnie, 2015; Bolick & Rogowsky, 2016; Cutler, 1989). In today's schooling system, where self-contained classrooms are the norm within most elementary schools, we also look to differentiation as a solution to the issues of cultural, linguistic, and academic diversity among students despite the homogenous composition based on chronological age (Bolick & Rogowsky, 2016; Howard, 2003).

What is relatively recent is the current focus of research on differentiation practices within our current school system. Vygotsky (1978) originally set the tone for this with his groundbreaking zone of proximal development (Birnie, 2015). Tomlinson (2000) later built a research-based differentiation program that catapulted her to expert status (Birnie, 2015).

Socioeconomic Trends

To further the demand for differentiated programs, economic trends have also heightened the need for addressing academic diversity, particularly during economic downturns. Historically, research has demonstrated that students within lower socioeconomic demographics, those most likely to not attend preschool or remain in home-based care, present with a lack of readiness as pertains to prerequisite skills, such as impulse control and metacognitive processes (Musu-Gillette et al., 2017; Reardon & Portilla, 2015). More importantly, it has been demonstrated that the gap in learning caused by lack of readiness upon kindergarten entry stays significantly unchanged throughout the child's education (Reardon & Portilla, 2015). When connected with the fact that, at 37%, the highest percentage of students with a low socioeconomic status identified as Black and the next highest percentage, at 31%, identified as Hispanic, the implication for minority students and access to equality in education is profound (Musu-Gillette et al., 2017).

A longitudinal comparative research project conducted over a 12-year period and reviewed by Reardon and Portilla (2015) demonstrated a decrease in achievement gaps, despite economic trends at the time that would typically be connected to the exact opposite. The study, in which cohorts of children were selected upon entering

kindergarten and were followed throughout their primary and secondary education, sought to identify the connection between school readiness and academic achievement. Additionally, it uncovered that although an improvement had been achieved in narrowing the gap between students of color and their White counterparts, discrepancies in academic achievement due to lack of prerequisite skills upon entering kindergarten, remain consistent throughout a student's educational career (Reardon & Portilla, 2015). Identifying the connection between prerequisite skills, such as sequencing and maintaining an age-appropriate level of self-control, and student achievement can provide a means by which education may decrease the lag that has previously remained consistent throughout the student's school years (Jacob & Parkinson, 2015; Reardon & Portilla, 2015).

A meta-analysis conducted by Berkowitz, Moore, Astor, and Benbenishty (2017) further demonstrated the importance of classroom environment and its importance in meeting the needs of low-socioeconomic students. Additionally, higher engagement in classroom learning, which is supported by differentiation structures, was demonstrated as having a correlation to higher academic achievement for these students, which may further counteract a lack of prerequisite skills (Berkowitz et al., 2017). Reviewing more recent elements employed within instruction, such as the role of differentiation in the classroom and the influence of classroom environment, may give educators deeper insight into the connection between differentiation and the potential to narrow the achievement gap experienced by ethnic and linguistically diverse students (Reardon & Portilla, 2015).

Sociocultural and Demographic Trends

Alterations in demographic dynamics in upcoming decades are projected to increase the demands placed on the school system to maintain a program that meets a diverse student population. It is estimated that by 2050, the percentage of Latinos within the United States will grow to 29%, compared to 14% in 2005 (Howard, 2010). These statistics align with the more recent report, *Status and Trends in the Education of Racial and Ethnic Groups* (Musu-Gillette et al., 2017), which states that while the percentage of Black and White children ages 5–17 decreased, the percentage of Hispanic children increased from 16 to 25%. Such a shift in population pushes forth the importance of meeting the needs of students in this growing demographic, particularly the linguistic and cultural diversity contained with the self-contained classroom (Bolick & Rogowsky, 2016). Parallel to such statistics is recent documentation of the importance of instructional programs that promote children's strengths as focal points while attending to their academic needs (Howard, 2010). Such focus on student ability undermines the danger of the deficit model so often employed with culturally and linguistically diverse students.

Education as the Great Equalizer

In the almost 200 years since Horace Mann (1839) made his prolific journey in pursuit of equality in education, considerable advancements have been made on the structural equality in the construction of the school building. Yet within those walls of opportunity lies deep unspoken dialogue and hidden curriculum that does not reflect the needs of all students (Harry & Klingner, 2007; Howard, 2010). These considerations are critical for promoting equitable access to our curriculum In the case of African American

students, the differentiation model discussed in this research encourages practitioners to look beyond the deficit model, as discussed by Harry and Klingner (2007), by focusing on the students' authentic ability in each standard, rather than their perceived ability, which can be influenced by even unacknowledged bias (Howard, 2010). Additionally, it addresses the proclivity of classroom teachers to attend to the academic areas in which a student is deficient, rather than give enrichment in an area of strength, particularly if both of these characteristics present in the same student (Ronksley-Pavia, 2016; Townend, 2015).

Cultural Characteristics and the Deficit Model

A flexible differentiation structure strengthens the role of the teacher as an objective practitioner within the classroom by identifying both strengths and areas of challenges for individual students, instead of placing students within stagnant small groups (Mayes, Hines, & Harris, 2014). The teacher must be critically aware and consistently self-reflective of how deficit models may contribute to the underserved subset of twice-exceptional students, especially in the categories of linguistically and culturally diverse students (Howard, 2003, 2010; Mayes, Hines, & Harris, 2014). Such cognizance requires teaching-practitioners to employ transformative reflection that identifies unspoken dialogue and systemic injustices. A metacognitive approach on the part of the teacher is essential to identifying students' needs and leads to ongoing action through the cyclical process of formative assessment and fluid groupings (Zimmerman, McQueen, & Guy, 2007). Teachers are the gatekeepers to providing such access to the curriculum in a way that allows students' needs to be identified without systemic bias (Newell, 2017).

A system of flexible differentiation, such as that studied in this research, may serve as a sort of checks and balances between teacher intuition and objectivity and therefore prevent biased decisions on student needs. Fluidity within the mode of differentiation provides the opportunity for addressing "intersectional approaches" (Becares & Priest, 2015, p. 3) that address the multitude of students' overlapping cultural identities and the way they influence each other by allowing for a variety of strategies to be integrated based on specific student need and small group focus. Such opportunities ensure the opportunity for equitable access to curriculum by allowing the teacher practitioner to fine-tune instruction to specific students' needs.

Diversity within the Classroom as Cultural Wealth

For students of linguistic and cultural diversity, a structure of differentiation in the classroom can open up the opportunity to connect the academic environment to that of their community experience (Adaams, 2017; Tanner, 2017). In particular, first generation, U.S.-born youth demonstrate a strong impetus to maintain a connection to their community of origin (Valenzuela, 2017). Without the opportunity for curriculum to be presented in a way that maintains the students' desire to remain connected to their community of origin, we risk alienating students when we disconnect academics from community life by demanding a form of assimilation that erases the "social capital" they possess (Valenzuela, 2017, p. 276). Classrooms that embody the spirit of cultural wealth and see diversity as an asset promote lively and engaging learning environments (Adaams, 2017; Souto-Manning & Martell, 2016b; Valenzuela, 2017).

Authentic and Objective Assessment as a Path to Equity in Instruction

Concurrently, by addressing the needs of students who require enrichment in order to be challenged based on an objective rubric model, such as those presented in this research, teaching-practitioners ensure students obtain authentic equity in education that goes beyond the physical structures of school buildings, regardless of cultural and linguistic diversity (Sharp & Clemmer, 2015). Much like instruction, assessment of student needs must not exist in a cultural vacuum, devoid of considerations for specific influences and the unique composition of the individuals teaching-practitioners assess. The smaller ratio provided in flexible differentiation and formative assessment presents the opportunity for assessing students' authentic abilities and needs. Enrichment cluster groups for ELLs in a diverse environment can help to identify needs and provide enrichment for students who are twice exceptional, in that they are not yet fluent in English but present with gifted characteristics (Allen, Payne, & Brown, 2016).

Design of Flexible Differentiation

Flexible differentiation is an instructional method that encompasses specific characteristics critical to providing versatility in the way the teacher meets the needs of students. These characteristics include the use of formative assessment positioned in a skill-based fluid method that uses a small teacher-to-student ratio grouping format (Fuchs & Fuchs, 1985; Jones, 2015; Tomlinson, 2014; Tomlinson, Moon, & Imbeau, 2015). In this flexible differentiation model, teacher intuition is synthesized with objective data and the teacher is situated as the facilitator of learning (Heacox, 2017; Jones, 2015; Pham, 2012; Tomlinson, 2014).

Fluid Model

When constructing a differentiated program where a focus standard will be presented intensely, best practices dictate that low performance in one skill set should not result in assigning the student a below grade-level grouping for all skill sets. In order to help students meet their personal potential, teaching-practitioners must aim for divergence in the method used to compose small groups (Tomlinson, 2014). Instruction ill-matched with a student's instructional level, as indicated by their zone of proximal development, hinders academic growth and realization of personal potential (Tomlinson, Moon, & Imbeau, 2015; Vygotsky, 1978). Therefore, the theory of differentiation underlines its egalitarian nature by proclaiming equality is recognized as receiving what a student needs, not necessarily uniformity in instruction. At first glance, this may appear contradictory. However, as Tomlinson (2014) stated, educators must proceed "without assuming one student's roadmap for learning is identical to anyone else's" (p. 4). The flexible differentiation theory holds that true success lies in the ability to give students the opportunity to continue to their next personal goal, not in the implementation of a homogenous curriculum (Tomlinson, 2014).

Formative and Ongoing Assessment

In order to accomplish the task of grouping students according to individual need in a specific standard, formative assessment must be carefully implemented on an ongoing basis. Continuous assessment requires careful crafting of measurement tools that authentically demonstrate student ability (Jones, 2015; Pham, 2012). Formative assessment works as a circular process in conjunction with the curriculum goals by guiding instruction (Tomlinson, Moon, & Imbeau, 2015). The teacher may synthesize

multiple formats of assessment, including anecdotal and observational methods. These informal methods can be used in conjunction with more objective measures to provide the checks and balances necessary to prevent observer bias when judging the appropriate intervention for the student (Jones, 2015; Tomlinson et al., 2015). It is critical that the teacher-practitioner maintain a reflective quality in order to make sure assessments and interventions are targeting the authentic needs of the student (Jones, 2015). Pre-assessment, efficient use of time in the classroom, and constructing an inclusive environment are all considerations and benefits of the formative assessment model used in this research study.

Pre-assessment as part of the formative assessment process. Although pre-assessment is usually considered separate from the on-going nature of formative assessment, the research contained in this study posits that the preview of students' abilities in a skill before it is taught is the starting point of a formative assessment program as applied in a differentiated model of instruction. Tomlinson, Moon and Imbeua (2015) referred to the diagnostic nature of a pre-assessment. This first look into the needs of students determines the way in which the teacher utilizes the resources within the classroom, such as time and materials. Additionally, it is through a pre-assessment that teachers may look for patterns of error previously acquired by students and ensure the presence of prerequisite knowledge (Fitch, 2015; Heacox, 2018). If pre-assessment indicates a student lacks prerequisite skills, differentiation provides the structure to assimilate these skills into a small group session and address the deficit promptly in order to prevent further consequences (Fitch, 2015). Both pre-assessments and formative assessment may be conducted formally, such as the collecting of student

work samples, or informally through observational and oral activities (Heacox, 2018). Providing choices in the way a student may demonstrate academic growth further promotes equality in the classroom by acknowledging the diversity among the student population within a self-contained classroom (Pham, 2012).

Formative assessment as a path to efficiency in the classroom. Though ongoing formative assessment appears time consuming, it plays an important role in streamlining instruction. For example, through the formative process, the teacher may discover a skill has been mastered by the majority of the class and no longer needs to be addressed during the already time-pressed instructional day (Heacox, 2018; Jones, 2015). Instead, enrichment opportunities can be offered as extensions of the mastered skill upon completion of mandatory assignments during the fluid small group structures (Tomlinson, 2003). Although it is important to note that, on its own, this structure does not represent differentiation, it is an additional opportunity for enrichment presented in the fluid structure (Metropolitan Center for Urban Education, 2008).

An additional example includes the discovery that a majority of the class still struggles with a skill. Therefore, the teacher will know to relegate this skill to direct instruction in a whole group setting, rather than conducting four separate groupings on the same level for the identical skill (Tomlinson et al., 2015; Jones, 2015). This diagnostic process ensures the best use of instructional time. These two examples demonstrate the impact of using student artifacts and observation to find patterns of need within the classroom through ongoing formative assessment (Tomlinson et al., 2015).

Formative assessment as a means to inclusivity. Despite indications that formative assessment develops an ongoing knowledge base to guide teachers in their

instruction, this form of continuous assessment is more common in upper grades and underrepresented in scholarly research (Jones, 2015). Building inclusivity within any school, especially during the formative years of primary education, requires ongoing assessment measures to monitor the academic growth of all students, including students who are on grade-level, advanced students, and those with learning challenges (McLeskey & Waldron, 2000).

Small Teacher to Student Ratios

Smaller teacher to student ratio is an integral component to the theory of differentiation. Smaller group structures not only allow for more individualized attention in a classroom of 20 or more students, it permits the teacher practitioner to implement the astute observations necessary for ongoing formative assessment in order to identify any external factors that may be preventing access to the curriculum (Heacox, 2018; Tomlinson, 2014). The ability of the teacher practitioner to be attentive to the needs of the students allows clear observations to be blended with teacher insight, which is reviewed and compared to student artifacts. These two forms of assessment are combined to determine the student's rubric score and interventions on specific skills (Tomlinson, 2014).

In a quantitative study conducted by Baker, Young, and Martin (1990) with a sample of six developmentally delayed special needs students, small group structure was compared to individualized learning in both the time it took to master the skills and efficient use of instructional minutes. In regards to the speed in which students gained mastery of the skill, one-to-one instruction was a clear winner, yielding a mean percentage advantage of 175% (Baker et al., 1990). Based on these results, individualized

instruction is the most efficient instructional method, as the purpose of targeted instruction for those who are deficient in a skill favors a rapid advancement towards grade-level proficiency. However, when researchers reviewed the efficiency factor of both instructional methods, they found that individual instruction demanded a 162.8% increase in instructional minutes in the area of spelling alone (Baker et al., 1990).

A mixed methods research study by Cawthon and Maddox (2017) suggested that individualized grouping should be reserved for only the most severe cases of academic challenges and that students with moderate academic gaps in reading and writing most benefited from small group instruction, as long as the groups were homogenous. This evidence further supports what educators discovered in the 1970s when individualized education was at its height of popularity. Individualized instruction is simply not sustainable in the self-contained classroom (Hattie, 2009).

A Blend of Data Driven and Teacher Insight

Within the structure of flexible differentiation lies the critical task of grouping the students. The complexity of this task is increased in a flexible differentiation model, as it strives to efficiently meet the needs of all students within the self-contained classroom. The challenge of forming effective small groupings in a flexible way is strengthened by acknowledging the insight of teachers and blending data and teacher intuition to form a system of checks and balances (McKlesky et al., 2014; Mclaughlin, 2017).

Acknowledging the insight of teachers. A study on inclusive elementary schools that had successfully met the challenge of academic diversity, conducted by McKlesky et al. (2014), demonstrates the importance of data-driven instruction at the classroom level. Teacher participants in the study had the opportunity to create a system for analyzing

student data, a practice that increased their ownership in the assessment process (McKlesky et al., 2014). This component is acknowledged in the study as contributing to the success of inclusive classrooms and underlines the value of allowing teachers to synthesize their unique style of teaching, while honoring the insightfulness they bring to their classroom based on in-depth knowledge of students. Additionally, it declares the value of training and experience that teachers possess (Heacox, 2018; McLaughlin, 2018; McKlesky et al., 2014). Anecdotal methods are especially important when serving students who are linguistically, culturally, and academically diverse. A teacher practitioner must remain reflective of extenuating factors, including language barriers and special needs, which may influence a student's understanding and performance on an assessment and how it authentically reflects upon students' true ability (Heacox, 2018).

A system of checks and balances. Blending observed patterns of need with objective student artifacts provides a process of checks and balances and honors the professional and practitioner nature of the teacher (McKlesky & Waldron, 2000; Tomlinson et al., 2014). In a quantitative study conducted over the course of a two-year period in fourth- and fifth-grade classrooms in 32 Illinois elementary public schools, researchers from the National Center for Education Evaluation and Regional Assistance (2018) studied the effects of data-driven reading instruction based on benchmark assessments. The results did not show significant effect on students' reading achievement in either of the grade levels. It also could not establish the relationship between the collection of student data and the likelihood of teachers to implement differentiation in their classroom (National Center for Education Evaluation and Regional Assistance, 2018).

These findings support the idea of the ineffectiveness of institutional procedures, such as benchmark testing, if teachers are not provided with adequate guidance and opportunity to synthesize their own judgments into the assessment process (Mclaughlin, 2017). The synthesis of data and teacher intuition to determine student placement proposed in this research is supported by the evidence provided in these studies, which acknowledges that teacher intuition contributes valuable information to the reality of students' variation in ability (Heacox, 2018; Lawrence-Brown, 2004, McLaughlin, 2017). Nonetheless, the rubric system utilized in this research is not presented as a prescriptive approach, rather a description of how flexible differentiation can be implemented in the classroom to meet academic and linguistic diversity in a self-contained classroom.

Teacher as Practitioner and Facilitator

The overarching design of the flexible differentiation method places the teacher in the role of practitioner and facilitator. In this role, the teacher as practitioner has the primary responsibility of providing an environment that eases the process of differentiation in the classroom and addresses the needs of the students (Dewey, 2017, McGee, 2017). Students must have ownership of their learning environment in a way that gives clear boundaries and is scaffolded over time, which requires the teacher to carefully deliberate the responsibility given to students. A teacher-practitioner facilitates the environment of the differentiated classroom through carefully crafted scaffolding of student responsibility over time, as the teacher perceives the class to be ready. Successful scaffolding timelines may differ between classes, depending upon the unique composition of students in the classroom (McGee, 2017; Tomlinson, 2014).

Implementation of a flexible differentiation model requires the teacher-

practitioner to provide students with clear structures and procedures within the classroom environment while the teacher is working with small groups. An environment in which the students are given clear guidelines and procedures for appropriate interactions during small group structures maintains a productive work environment, despite the interactive nature of the differentiated classroom (Dewey, 2017; McGee, 2017). Clear guidelines have the additional benefit of providing students with social and emotional growth, which is indicated as a foundation for academic success (Dewey, 2017; Korpershoek et al., 2016).

Meeting the Needs of a Diverse Population through Flexible Differentiation

The academic, cultural, and linguistically diverse needs of students can be met through adapted instructional practices, opportunities for enrichment, and providing students with a variety of ways in which they may demonstrate competency (Lawrence-Brown, 2004; Pham, 2012). Differentiation presents the opportunity for incorporating all of these characteristics into instruction. For the purpose of this research, these diverse needs are grouped into the following subsets: academically talented, gifted, culturally and linguistically diverse, academically challenged, and twice exceptional.

The Academically Talented or Gifted Learner

The academically talented or gifted student often has a deep-seated need to be challenged and can become easily bored and frustrated when forced to maintain the same pace as the rest of their peers (Sharp & Clemmer, 2015). Yet, when faced with the time-pressed schedule of a self-contained classroom, it is those in the highest percentile of students that are often forgotten in favor of spending time with those who are struggling (Roach & Bell, 1989; Sharp & Clemmer, 2015). Strategies and potential complications

for the academically talented or gifted learner are presented in this section for consideration

Strategies for differentiation with the academically talented and gifted. Accommodations for academically talented and gifted learners may include more opportunities for self-selected activities, while taking care to not ignore the needs of these students by assuming they will be fine on their own (White, 2013). Independent study opportunities may provide self-motivated students space for intrinsically based learning, but these activities should be assigned with careful consideration for the maturity of the child (White, 2013). Teacher practitioners should provide the academically advanced student with activities that "differentiate up" (White, 2013, p. 17) in the form of various levels of the cognitive taxonomy, including critical analysis, evaluation, and decision making. Additionally, tasks provided for the academically talented and gifted are most impactful when they are situated in purposeful and meaningful learning for which the student feels a connection (Olthouse, 2013).

Complications of the academically talented and gifted subset. When working with both gifted and academically talented children, a common danger is to assume these students are high achievers in all areas. This assumption can lead to "unintended consequences" (Lawrence-Brown, 2004, p. 56), such as gaps in learning when areas of weakness are not identified and addressed. For this reason, flexible grouping is important to provide the opportunity for identification and review of skills that present a challenge. A systematic approach, such as a standard or skill-based rubric, can provide the structure necessary to identify areas in which the gifted or talented student's learning contains gaps or weaknesses (Sharp & Clemmer, 2015).

While some academically advanced and gifted students may benefit from moving at a faster pace through curriculum, teachers must be aware of the possibility that gaps in learning may occur when moving too quickly through the scope of material in a grade level. In a meta-analysis conducted by White (2013), available research studies were analyzed to identify strategies effectively used with gifted learners in the self-contained classroom. The potential risk of creating gaps in the learning of gifted students was recognized in this study and further demonstrates the importance of careful deliberation when matching a faster paced sequence of instruction with an academically talented or gifted student (White, 2013). Pre-assessments as part of the differentiation process can be used to determine if learning can be compacted and can mitigate the danger of faster paced coverage of the curriculum (Sharp & Clemmer, 2015; White, 2013). The academically talented and gifted learner should not be left to repeat concepts they have already mastered (Sharp & Clemmer, 2015; Tomlinson, 2014).

Linguistically and Culturally Diverse Subsets

When surveying the wide range of learners in our classroom, the next group to consider is the linguistically and culturally diverse subsets (Sharp & Clemmer 2015). A systematic approach to identifying the needs of students can help to prevent placement based on cultural stereotypes or other hurdles that prevent access to the curriculum, such as language barriers (Deunk et al., 2018; Harry & Klingner, 2007). For example, Mayes, Hines, and Harris (2014) noted in their qualitative research the under-representation of African Americans in the gifted program, coupled with an over-representation of African Americans in the remedial programs, a phenomenon connected to the deficit model (Harry & Klingner, 2007; Mayes, Hines, & Harris, 2014). By providing differentiated

instruction that honors the needs of all students and authentically identifies student mastery of curriculum, education can promote that students should not require a fabricated label, founded on bias or misperceptions, in order to receive support (Harry & Klingner, 2007).

For this purpose, teaching-practitioners must ensure that differentiation does not turn into tracking, which systemically limits students and maintains their place in the academic strata by only allowing them access to certain levels of education (Howard, 2010). For example, students of cultural and linguistic diversity at the secondary levels have described experiences of exclusion by way of discouragement from access to advanced placement courses, despite the fact they had maintained a high GPA (Howard, 2010). Hidden curriculum and dialogue within our school system that raises such barriers must be identified in the primary years of education. Reaching this goal demonstrates a need for a systematic approach to identify student needs to counteract potential biases (Deunk et al., 2018; Howard, 2010). True differentiation provides the fluidity and objectivity necessary to prevent limiting our students due to projections of biases based on the deficit model (Harry & Klingner, 2007; Howard, 2010).

Grade-Level Students

The needs of the grade-level student who maintains an average achievement must also be considered (McCluskey & Waldron, 2000). Is the educational system content to allow them to be pushed along or dare it challenge them as they demonstrate proficiency in grade-level skills? Should the system simply be complacent in the attention it sets aside for these students, allowing students to settle for the average? A fluid differentiation program can be used to identify areas in which the average achiever can also be

encouraged to reach a higher level of learning within the taxonomy (Tomlinson, 2014). Although differentiation may prevent the danger of teaching to the middle, it can also be utilized to counteract the opposite dilemma in which a teacher neglects this subset in favor of solely focusing on those who are struggling (Tomlinson, 2014). The topic of grade-level students and their place in the classroom is not often acknowledged by scholarly literature and presents an opportunity to contribute insight into the role of differentiation in the classroom for this subset of students.

Academically Challenged or Learning Disabled

Differentiation for the academically challenged and learning disabled is founded on the premise that success is not measured in mastery. Rather, success for this subset is based on the amount of growth towards mastery in comparison to where they placed on pre-instructional assessments (Tomlinson, 2014). This measure of success does not negate holding students who are academically challenged to high academic standards, but it does acknowledge the importance of addressing any gaps in prerequisite skills and the need to use diverse strategies and alternative timeframes when planning instruction for students in this subset (Fuchs, Fuchs, & Vaughn, 2015). Methods of addressing the needs of the academically challenged and disabled, including inclusion versus special individualized instruction, are weighed, along with instructional techniques recommended for this subset of students as it relates to flexible differentiation.

Inclusion versus specialized individualized instruction for the academically challenged. Although significant research demonstrating the efficacy of inclusion as opposed to specialized individualized instruction for the learning disabled is not widespread, studies have demonstrated a strong preference in the current school system

for inclusive, rather than specialized, education for these students (Fuchs et al., 2015). A qualitative study conducted by Fitch (2003) explored the experiences of special need students in both inclusive and specialized education throughout a six-year window of time. The study revealed that special need students in an inclusive setting demonstrated an increased favorable self-concept (Fitch, 2003). Additionally, in their review of different models of intervention for academically struggling students, Fuchs, Fuchs, and, Vaughn (2015) disclosed a dismal fact: Upon reaching the secondary years of schooling, learning-disabled students in inclusive settings may be as much as 3.4 years delayed in their academics. These results at once support the trend for inclusion, which requires teachers to be equipped to address the needs of these students within the self-contained classroom, particularly in the formative years of education. The primary years of schooling are critical for a student with learning disabilities in order to prevent her from lagging behind her peers (Fuchs et al., 2015).

Instructional strategies within differentiation for the academically challenged. In place of rote skills, interactive and authentic activities should be provided for the academically challenged and learning disabled during these small group sessions to ensure maximum student engagement (Lawrence-Brown, 2004). Providing academically challenged students with academic rigor in a way that meets their zone of proximal development is essential (Tomlinson, 2014; Vygotsky, 1978). As observed by Davis (2010) in a study addressing the way differentiated small group lessons can meet the needs of a diverse student population, students who struggle with academic tasks such as reading and writing may find it prohibitive to demonstrate their authentic knowledge of a

concept. This observation underlines an important challenge within the self-contained classroom (Davis, 2010; Tomlinson et al., 2015).

Differentiation is not a lessening of the expectations for students who are struggling but a way of providing them with a different or longer path to mastering a skill, continually acknowledging the growth they make through formative assessment, and reflexively considering how instruction should evolve to meet their growth (Tomlinson, 2014). Along these lines, it is important to ensure that students with learning disabilities receive the modifications and accommodations prescribed for them. Differentiation provides the opportunity to synthesize adjustments to the delivery or assessment of a skill as indicated by an individualized education program (Bender, 2009). Successful inclusivity for the learning disabled in the self-contained classroom is dependent upon the way in which teaching-practitioners amalgamate the needs of these students innately into the classroom structures (McLeskey, Waldron, & Redd, 2014). Flexible differentiation administers the structure by which this synthesis of needs for appropriate formative assessment and instruction is neither a burden nor an afterthought.

Twice-Exceptional Student

The twice-exceptional subset encompasses an expansive spectrum and is defined as a student that has two or more designations of special needs (Reis, Baum, & Burke, 2014). For example, a student who presents as gifted with a learning disability is identified as twice exceptional. The way in which these two distinct categories interact produces a unique and symbiotic relationship affecting the way in which a student accesses the curriculum (Ronksley-Pavia & Townend, 2017). These parallel exceptionalities, presenting as atypical strengths or weaknesses, require special

consideration on the part of the teaching practitioner (Ronksley-Pavia & Townsend, 2017). Research by Townsend (2015) and Ronksley-Pavia (2015) indicated the twice-exceptional subset is a difficult place for a child to navigate. While giftedness is often considered a prize by society, it is staggering to realize the complications that arise when giftedness is coupled with a disability, such as Asperger's or ADHD. Students within this subset often find themselves at risk for academic non-performance and decreased self-concept (Moon & Reis, 2004; Ronksley-Pavia & Townend, 2017).

Addressing counteractive needs within the twice-exceptional population. The twice-exceptional student often conveys experiences where an emphasis is placed on their disability instead of their exceptional strengths (Townend, 2015; Ronksley-Pavia, 2016). Students often communicate the negative connotation their disability projects onto the way they are perceived by the teacher or discover the teacher discredits the possibility of competing needs presenting in the same student (Reis, Baum, & Burke, 2014; Ronksley-Pavia & Townend, 2017). Additionally, they may feel the frustration of being capable of a skill but unable to adequately articulate the answer (Moon & Reis, 2004). Differentiation provides opportunities within the self-contained classroom for addressing the parallel needs of a student who presents with both giftedness and learning disabilities and calls attention to the reality of this occurrence in the self-contained classroom.

The cultural connection. Culturally diverse students who demonstrate gifted characteristics may also experience barriers within the classroom (Harry & Klingner, 2007; Mayes, Hines, & Harris, 2014; Valenzuela, 2017). Cultural constructs are often perceived as deficits or pathology, rather than simple "human variation" (Harry & Klingner, 2007). This perception can lead to instructional treatments based on cultural

stereotypes, rather than student need (Harry & Klingner, 2007). An ethnographic study of twice-exceptional African American high schoolers who were identified as gifted in a specific area, such as dance, art, or music, and also held placement in a remedial academic program demonstrated how these students both understood their learning-disabled (LD) status, and felt pride in their gifted designation (Mayes, Hines, & Harris, 2014). Additionally, through qualitative measures, including a demographic-based questionnaire and semi-structured interviews, the students shared their impression of school as one lacking in differentiation to meet their needs. They also noted a lack of interest on the part of the teachers (Mayes, Hines, & Harris, 2014). While similar studies in the elementary school environment are not readily available, the insight expressed by these older students gives awareness to educators working with similar subsets in the formative years of education.

Twice-exceptional English language learners. ELLs may possess hidden disabilities or giftedness, disguised by hidden bias or limitations in their ability to express themselves in the dominant classroom language (Blackburn, Cornish, & Smith, 2016). In their qualitative study, Allen, Robbins, and Brown (2016) demonstrated the benefits of small group structures found in differentiated learning for the purpose of identifying these needs. Attempting to prevent over-representation of ELLs in remedial services, many school districts will not allow an ELL student to be assessed for a learning disability until they have exited from the program. Thus, teachers must remain cognizant of students' needs, giving struggling ELL students additional support by utilizing a flexible differentiation plan (Allen, Robbins, & Brown, 2016).

A holistic view of the twice-exceptional student. A flexible differentiation plan, which by definition "flexes" from skill to skill based on individual needs, allows for the parallel needs of this subset to be served, using holistic measures of giftedness as observed by the teacher (Blackburn, Cornish, & Smith, 2016; Reis, Baum, & Burke, 2014). A whole-child perspective circumvents the biases situated within many standardized tests used as gifted indicators, which may contain language and dominant culture normatives that serve as barriers to the culturally and linguistically diverse population (Howard, 2010). The use of authentic student artifacts, work samples, and observations in flexible differentiation can help identify strengths in students that would otherwise be excluded from opportunities for enrichment.

Benefits of Flexible Differentiation Based on Formative Assessment

A successful differentiation program will attend to the gaps in students' learning by identifying patterns of needs through thorough ongoing assessment (Heacox, 2008; Tomlinson, 2014). During the use of a flexible grouping structure, instruction is customized to students' level. Adjustable grouping allows the student to move fluidly through the grouping depending on their need in a specific area, without the insurmountable burden found in the individualized education of the 1970s (Hattie, 2009). The fluidity of within-class skill-based groups also aims to avoid the stigma associated with stagnate groups and promote universal access to the curriculum, preventing the negligent practice of pushing students along in the curriculum without thought to their readiness (Heacox, 2008. 2017; Tomlinson, 2014). Increased student participation through engagement and prevention of testing bias are discussed in this section as primary benefits of flexible differentiation.

Increased student participation and engagement. Prior research on the effects of flexible small group differentiation demonstrates significant impact on student engagement by providing the opportunity for increased cross-student interaction when compared with whole class instruction (Davis, 2010; Manship, Farber, Smith, & Drummond, 2016; Simmons, 2015). In a research project comprised of five case studies in which data was collected through observations and interviews, one of the questions researchers sought to address is the impact of differentiated learning within the formative years of education (Manship et al., 2016). All five cases implemented differentiation in the classroom through the use of within-ability grouping. Four of the cases supplemented this with mixed-ability groupings. Through focus group sessions and interviews, faculty in these five case studies shared that student participation had noticeably increased and students appeared more at ease with their learning environment, although social prerequisite skills remained higher for those students who had attended preschool (Manship et al., 2016). A study conducted by Davis (2010) demonstrated a significant amount of participants responded positively to small group differentiated instruction, with 78% of students responding that the small differentiated reading group activities provided the right amount of challenge, which also provided the opportunity for academically challenged students to experience success. On the opposite end of the spectrum, the gifted student can be provided with the motivation that comes along with appropriate challenge as supported by the zone of proximal development (Martin & Pickett, 2013; Vygotsky, 1978). This also applies for the gifted student who may have to wait a few years into their education to receive their gifted designation. However, these students do not become gifted with their designation; they have been gifted throughout

their entire encounter with the educational system, experiencing it through their own lens. Providing these students with appropriate challenge sparks motivation and has been linked to preventing behavioral issues with students in this subset (Martin & Pickett, 2013).

In contrast, tasks assigned to the entire class, referred to as "uniform tasks" (Davis, 2010), are often perceived by the student as inappropriate to their ability, with students communicating that these tasks were too hard for them. This perception caused some students to display avoidance behaviors and fears that their ability in an academic area would be compared to other classmates, resulting in more competitive behavior (Davis, 2010). A negative effect on the behavior of gifted students when subjected to non-differentiated tasks has also been observed (Martin & Pickett, 2013). Teachers of self-contained classrooms cannot rely on gifted programs to provide for the needs of gifted students.

In another study that reviewed the experiences of Spanish-speaking ELL students with gaps in their education due to relocations corroborates the idea that differentiation promotes increased student engagement in the classroom, specifically in linguistically diverse student populations (Santisteban, 2014; Taylor & Parsons, 2011). Providing students with divergent modes of presenting concept mastery encourages participation at a level of comfort, which appears to improve students' willingness to participate (Santisteban, 2014; Taylor & Parsons, 2011). Additionally, opportunities for student choice that are inherent in differentiated learning provide students with a safe platform for social interaction with their peers and provide increased motivation to participate

(Davis, 2010; Santisteban, 2014). These studies highlight the importance of differentiation to ensure increased participation for our diverse student population.

Authentic assessment and preventing testing bias. Biases that can threaten the validity of an assessment can be found in both pre-conceived perceptions on the part of the teacher practitioner or in the measurement tool itself when its content favors the majority cultural norms (Lam, 1995). Authentic assessment based on student artifacts is one way these biases can be prevented. Beginning with pre-assessment, all prerequisite knowledge is reviewed, allowing the teacher practitioner to identify any gaps in learning instead of basing their judgment on the previous year's average of achievement grade (AVAG) (Fitch, 2015; Heacox, 2018; Tomlinson et al., 2015).

Student artifacts and work samples, combined with anecdotal observation, provide authentic insight into a student's ability that might not otherwise be obtained (Davis, 2010; Lam, 1995; Tomlinson et al., 2015). Authentic formative assessment provides discernment for the teacher in opening up opportunities for enrichment or extra support to students based on their actual ability, not the overall perception of a student's academic ability (Heacox, 2018). Although some advocate for standardized testing and view its uniformity as providing an equal platform, the differences in children's accessibility due to cultural influences and linguistic diversity need to be addressed in order to provide accuracy in instructional diagnostics (Lam, 1995). This argument provides the foundation for authentic assessment within the flexible differentiation model.

Effect on achievement and academic growth. In meta-analyses by Bolick and Rogowsky (2016) that covered different grouping structures and reviewed each method's measure of success by review of available research, within-class grouping based on

ability was determined to show significant benefits on academic growth in the elementary classroom. Contradicting studies have shown that students situated in socioeconomically advantaged communities demonstrate more benefit from this structure than their economically disadvantaged peers. Students from the latter group demonstrated either no benefit or adverse consequences in correlation to differentiation in the classroom (Bolick & Rogowsky, 2016). Additionally, a study conducted by Johnson (2016) raised concerns that students in the academically challenged and grade-level categories did not show significant benefits from within-ability grouping, while the academically talented subset demonstrated gains from working in heterogenous groupings. These contradictions warrant further investigation and demonstrate a need for more information to explain these effects.

Challenges of Flexible Differentiation

While proponents of differentiation have long focused on the benefits afforded to diverse students in a self-contained classroom through the use of differentiation, some concerns have been voiced about its instructional integrity. Scholarly inquiry must not be afraid to look directly at the criticisms of differentiation because such concerns hold the key to potential improvement in this instructional method. Reflective practices that incorporate different viewpoints support the rigor and ethical value of the research and challenge any pre-established opinions the researcher may have (Herr & Anderson, 2015; Merriam & Tisdell, 2016; Metzler, 2017). Concerns connected to differentiation such as research findings that contradict benefits, the potential to disadvantage the academically challenged through self-fulfilled prophecy, and the logistics of how to manage a classroom while working in small groups are cited in this section (Delisle, 2015; Johnson,

2016; Bolick & Rogowsky, 2016). These concerns contribute to the conversation of research on differentiation by promoting reflective ways in which they may be addressed.

A Self-Fulfilled Prophecy as a Threat to the Academically Challenged

Ability grouping may inadvertently disadvantage academically challenged students by creating a self-fulfilling prophecy and a system of maintaining their role within the school structure if not done carefully (Bowick & Rogowsky, 2016). Such disadvantage can happen when differentiation turns into tracking and creates a label a child may be doomed to carry (Howard, 2010; Lawrence-Brown, 2004). Based on the previously mentioned study by Bolick and Rogowsky (2016) in which students of lower socio-economic status received less benefits from the differentiation process, such disadvantage reflects the ways in which the social classes can be maintained through the system of education (Howard, 2010). The model of flexible differentiation used in this research addresses this concern by alleviating the stigma of stagnant groups through adjustable grouping, depending upon the skill to be taught, instead of relying solely on overall academic achievement and pre-determined testing (Tomlinson, 2014).

Classroom Management during Differentiation

The barrier most often cited by teachers and critics as to why differentiation is not effective is the challenge it presents for classroom management (Bowick & Rogowsky, 2016; Delisle, 2015). A flexible differentiation plan requires a high level of classroom management that enlists students in a role of ownership in their learning space (Tomlinson, 2014). Teachers must set clear expectations and boundaries, including procedures that provide a way for orderliness within the classroom to continue when the teacher is occupied with small groups (Tomlinson, 2014). Although not a focus of this

research, the teacher-researcher integrated many procedures to support an infrastructure of differentiation in the classroom and formatted a system that allowed for flexible differentiation to be implemented in an elementary self-contained classroom.

Summary

The review of literature contained in this theoretical framework provides insight into the curricular and ideological underpinnings of differentiation and reflects upon the lenses of historical and ecological perspectives that have influenced its development in the school system. These perspectives, including the blend of social efficiency and learner-centered principles along with community of practice theory, are critical to understanding the factors that shaped the method of differentiation (Dewey, 2017; Lave & Wegner, 1991; Popham, 2017). The diverse subsets of students that can benefit from differentiation are identified along with research-based findings on each group.

Musu-Gillette et al. (2017) identified an increase in Hispanic children in schools and highlighted the importance of instructional methods that meet the needs of diverse learners. Socio-economic trends that are correlated with academic gaps are also identified and point to the need for early intervention, such as differentiation (Reardon-Portilla, 2015). Ideas based on seminal theorists and current research are provided in this framework as powerful indicators of best differentiation practices for today's classroom, including the use of a fluid model with formative and ongoing assessment that can be used to prevent deficit models that disadvantage our culturally and linguistically diverse population as well as students that are twice exceptional (Tomlinson, Moon, & Imbeau, 2015). Small grouping is presented as a method to increase the productivity of instructional time (Baker, Young, & Martin, 1990).

Benefits, as well as concerns, of differentiation in a classroom are discussed in this review as presented in scholarly literature in order to understand valuable tenets as well as identify areas still in need of investigation.

Chapter 3

Research Design and Methods

Over the course of the last decade, practitioners situated within the field of education have found themselves challenged with significant change in instructional aims and classroom structure. Most recently, the full implementation of Common Core presents an emphasis on preparing students to advance in a global working community. Instructional strategies and goals of the self-contained elementary classroom have been notably impacted. The impact of a global workforce on curriculum collides with the growing challenge of meeting the demands of a diverse population (Allen, Robbins, Payne, & Brown, 2016; Cash, 2017). Educators must now grapple with the question of how to provide equity through accessible curriculum for all students.

Differentiation presents a strategy that has potential to address these increasing demands in education. Although differentiation is not new to educational discourse, shifting demands of a global economy and workforce have created a call to action for all stakeholders in education to provide our students with the skills they need for a 21st-century world (Pham, 2012; Stewart, 2012). The self-contained elementary classroom composed of students based on chronological age and varying ability compound this challenge for the elementary school teacher.

As stated by Lawrence-Brown (2004), in order for differentiation to be truly significant and worthwhile, it must be an endeavor that seeks to bring out success in all

students, including those who have special learning needs. Gaps often seen in this process pertain to the accessibility of appropriate curriculum for the gifted and twice-exceptional student as well as challenging students who are already meeting grade-level standards. Likewise, teachers have the parallel task of providing additional and remedial support for struggling learners (Heacox, 2008).

Vygotsky's sociocultural theory of learning, in which this research is situated, supports the practice of fluid differentiation through the lens of learning as a continual development rather than a learning destination (Kapucu, 2012; Subban, 2006; Vygotsky, 1978). Although cognitively focused, fluid small-group learning also provides the opportunity to engage students in activities that positively enhance their affective experience through social interaction (Kapucu, 2012; Subban, 2006; Vygotsky, 1978). Such differentiation addresses Webb's depth of knowledge (DOK) extensions of the taxonomies presented by Benjamin Bloom and his colleagues during the mid-20th century (Furst, 1981; Hess, Jones, Carlock, & Walkup, 2009). This instructional practice, in turn, connects to placing instruction within the zone of proximal development (ZPD) in order to guide the student to the next level of learning with the teacher as facilitator (Kapucu, 2012; Subban, 2006; Vygotsky, 1978).

Based on these challenges, the researcher seeks to determine the measurable impact, as indicated by student achievement, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction. The primary focus of the research is supported by the following overarching question and its sub-questions:

What are the measurable impacts, as indicated by student achievement and observed behavior, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction?

- What observable impact does flexible grouping, when based on the rubric baseline scores, have on student affect? Are there differences in student affect based on subset (English language learners and gifted/twice exceptional)?
- How are the needs of students who present as twice exceptional addressed using flexible groups identified by the rubric baseline scores (formative assessment)?
- How are the needs of English language learners addressed using flexible groups as identified by the rubric baseline scores (formative assessment)?

This study seeks to identify the relationship between formative assessment measures for the structuring of fluid and flexible groupings and student achievement in language arts skills. The problem of practice was identified through the researcher's experience of seeking best teaching practices for differentiation and also through conversations with colleagues that included the challenge of implementing differentiated skill groups in an effective and achievable manner. Another intent of this study was to initiate further conversation on best differentiation practices. The researcher began this process with the belief that each study should be a continuing piece of dialogue, intended to substantiate claims, uncover new truths, or address different ecological conditions.

Research Design and Intervention

The design of the research contained in this study is based on a mixed-methods action research approach with a cross-sectional time frame (Herr & Anderson, 2015). The qualitative component consisted of a case study element and narrative inquiry approach through the use of observational methods to understand the application of flexible differentiated learning in the self-contained elementary school classroom in a deductive manner (Merriam & Tisdell, 2013). The quantitative component included a quasi-experimental approach that employed a switching replications format (Seaman, 2014). Due to this format, the research contained a total of two data collection periods in order to implement the crossover and switching replications design. Each period of data collection focused on a different state standard as the focus skill in order to prevent a multiple measures threat to validity. Additionally, the within-subjects crossover design served to prevent a multiple measures threat to validity. The switching replications within-subjects crossover design was made possible by dividing the sample into two groups. During the first period of data collection, the researcher implemented the treatment with one group, while the other served as the control. During the second period of data collection, the researcher employed the crossover design by providing the treatment to the group formerly identified as the control group. The underlying method of the teacher-based rubric system is quantitative, comprised of interval data from student artifacts and one-to-one assessment.

Following the collection of the student artifacts, the researcher coded the interval data into ordinal rubric data. This procedure allowed the balance of the teacher-researcher's background knowledge and understanding of standards and students,

demonstrated through qualitative findings, to collaborate with quantitative information. Connecting back to the theoretical framework of this research, the use of fluid coding through the implementation of the rubric, based on consistent operational definitions, allowed the teaching-practitioner to target students' learning at their zone of proximal development, with the goal of reaching the next level of achievement on the focus standards.

While the small instructional groupings that were formulated within the treatment and control groups were based on factors such as the AVAG or their rubric score, the method of forming the treatment and control groups was based on balancing characteristics among the subjects to enhance the validity of the study. This procedure, identified as a block and match grouping, also served to help counter the convenience aspect of the sample. During the first four weeks of the study, approximately 10 students in the treatment group received the intervention, while the additional 10 students served as the control group. The groups' assignments to treatment or control procedures were switched at the four-week mark.

Identification of Focus Skills

Two second-grade language arts standards from the California Common Core State Standards were identified as focus skills. A multi-step process of selection was undertaken in order to identify these standards for use as focus skills based upon their consideration as being core components of the curriculum and their level of importance on the continuum as students prepare to enter third grade. A panel of second-grade teachers was consulted at Sunrise Elementary School, where this study was conducted. The panel was asked to identify two language arts standards that are core to the second-

grade curriculum and provide the foundation for success as students continue to the next grade. The panel was asked to recommend a standard from both reading and language. These recommendations were then polyangulated by a panel of third-grade teachers and both site administrators at Sunrise Elementary School. The panel of third-grade teachers was each asked to identify a standard from language and reading from the previously identified core second-grade standards.

The first core standard is found in the California Common Core State Standards under the language section and is referenced by its identification code L.2.1. The standard states the students will "demonstrate command of conventions of English grammar when writing…" (August et al., 2017). Under this category lie several sub-strand standards. In order to provide necessary delimitations, the researcher reviewed all the sub-strands by consulting the scope and sequence of the district's language arts curriculum, Wonders CA, and found all sub-strands to be covered equally among the grade levels. After confirming that one sub-strand did not supersede the others in importance, the researcher selected the sub-strand L.2.1e, which states students will be able to "form and use the past tense of frequently occurring irregular verbs (e.g., sat, hid, told)…" (August et al., 2017, p. CACCSS21).

The second core standard is also found in the California Common Core State Standards and is found in the Reading Informational Text section and is referenced by its identification code RI.2.5. It states that students will "know and use various text features (captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently" (August et al., 2017, p. CACCSS7). After an initial tie between this standard and RL.2.1, which states students will be able to "ask

and answer questions such as who, what, where, why, and how to demonstrate understanding of key details in text" (August et al., 2017, p. CACCSS6), the researcher once again consulted the scope and sequence of the district's kindergarten through sixth-grade curriculum. RL.2.1 is first covered in kindergarten and each subsequent year. RI.2.5 is covered beginning in first grade and every year after. The researcher then took into consideration the emphasis on informational text in reading instruction (Common Cores State Standards Initiative, 2017) and selected RI.2.5, as it contributes to students' preparedness for reading to learn, an important shift during the transition from second to third grade.

Description of Intervention

As demonstrated in Figure 3.1, the researcher implemented a flexible differentiated learning structure in a small group format situated in a fluid classroom model. The flexible groupings were formed using a pre-assessment referred to as a "quick check," followed by on-going formative assessment through anecdotal observation and/ or quizzes. A matrix of rubric scores for each student in each focus skill was maintained. As the student demonstrated mastery, growth, or regression in each skill, the corresponding interval numeral was marked on the matrix as dictated by the rubric. The formation of the small groups depended on the focus skill for that day and each individual's level of mastery on the specific focus skill to be covered based on their rubric score. The rubric score was based on the student's performance on a formative assessment task specific to each skill but could also be influenced by anecdotal observation.

The independent variable was situated in a two-pronged method and consisted of the formation of the flexible groupings based on specific analysis of students' individual mastery of the standard to be covered in the small group. Although the primary construct under investigation was the effect of flexible grouping, the researcher considered both flexible grouping and the use of a standard based rubric to determine student need as important to the method of differentiation under investigation in this study. The outcome of student achievement and how this assisted in alleviating gaps in achievement comprised the dependent variable.

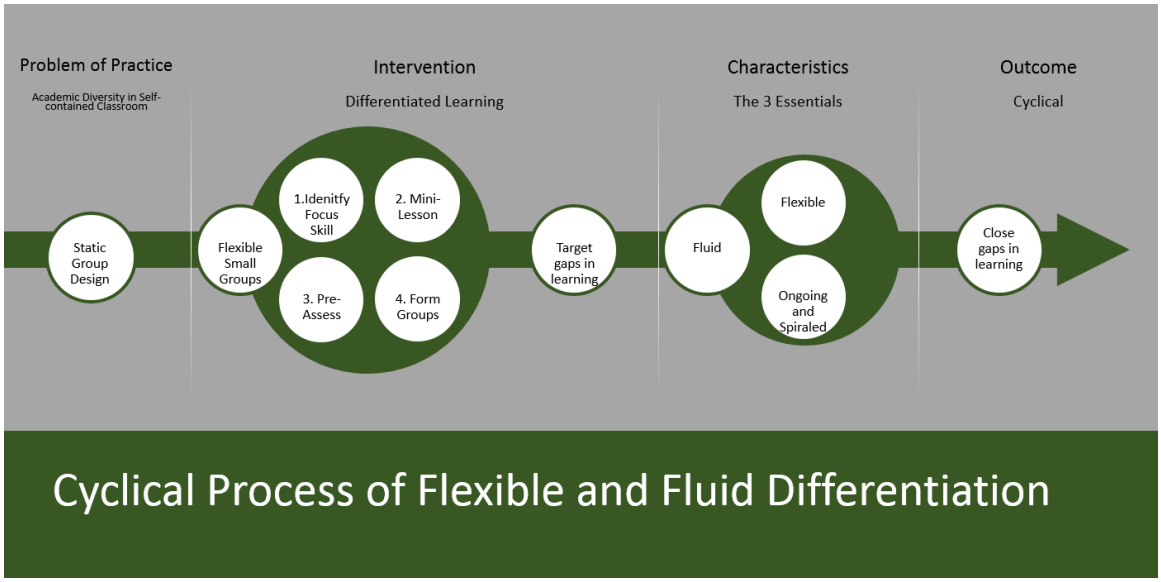

Figure 3.1 Cyclical process of flexible and fluid differentiation.

The control group used GPA and overall academic performance to form their grouping with no fluidity permitted and the treatment groupings used the level identified by the teacher-based rubric combined with fluid placement based on anecdotal observation and on-going formative assessment tasks. All students participated in small group sessions that contained approximately 10 minutes of intensive and targeted "bite-

sized" instruction. These small group sessions provided a blend of interactive and direct instruction. Both treatment and control groups received direct instruction in their focus standard during the whole class segments of the instructional day in equal amounts.

Subset Identification

Subsets of students were identified within the classroom in order to block and match between the control and intervention groups. These subsets included the following: gifted, twice exceptional, language learning populations, advanced, proficient, approaching proficiency, and below grade level. Operational definitions for these terms have been provided in the Definition of Terms section.

Gifted subset. Gifted status was indicated through the use of the HOPE Rating scale, which strives to provide equity in the identification of giftedness (Gentry, Pereira, Scott, McIntosh, & Fugate, 2015). After reviewing several options to define the gifted subset, the researcher selected this instrument based on its ability to provide a gifted construct that seeks to identify students of intersectionalities outside of the White normative (Peters & Gentry, 2010). As previously discussed, students from lower socio-economic subsets may not present with giftedness, as the construct is defined by normative standards.

The HOPE Teacher Rating Scale, developed at Purdue University, combines a consideration for environmental factors with qualities that indicate giftedness by seeking to look outside academic indicators (Gentry et al., 2015). Additionally, this rating scale formalizes the observational way a teacher may indicate the potential for giftedness to exist. The reliability of this instrument is demonstrated through a study that utilized a

sample of 1,700 students from three separate districts. Based on a normative sample, the alpha score obtained was 0.96 (Peters & Gentry, 2010).

Some caution is advised in the comparison sample that is used when conducting this assessment, and those administering this assessment are reminded to use within group comparisons that reflect the norms of the area in which the study takes place (Gentry et al. 2015). Although not possible at the time of the study to procure a local norm, the researcher compared the student data with the norms provided by the publisher that best fit the corresponding demographic.

The researcher concluded this instrument was necessary based on the fact that gifted identification does not occur in the district where the study took place until the end of third grade for the student's fourth-grade year in the district. Although the scale is behavioral and anecdotal in nature, it was necessary to select an instrument that would formalize the observational nature of a teacher's decision to provide extension activities to students in grades prior to fourth grade, while still providing validity and consistency to the construct as defined for the purpose of this research. Additionally, the researcher sought to look beyond academic markers, as doing so may circumvent the exclusion of students who are gifted but are prevented from accessing the curriculum or demonstrating their giftedness in a traditional way due to a learning disability or other executive function challenge (Ronskley-Pavia, 2016; Townsend, 2015).

English language learner subset. English language learner (ELL) students were identified through the English Language Proficiency Assessments for California (ELPAC), which is administered by the district to all students whose home language is other than English, as identified on a parent survey.

Twice exceptional subset. Twice-exceptional students were identified through the use of the HOPE Scale (Gentry et al., 2015) and being identified as a member of one other category, including language learner or special needs. This system allows for identification of students who are otherwise difficult to categorize based on traditional test instruments or measures (Reis, Baum, & Burke, 2014; Ronskley-Pavia, 2016).

Academically talented subset. Academically talented students, also known as advanced, were identified by their overall classroom grade point average (GPA) of 90% or above in ELA, which includes the areas of reading, language, and writing. Proficient students were identified by their overall classroom GPA of 75–89%. Students approaching proficiency were identified as having a classroom GPA of 68–74%, and students who had a GPA of 67% or lower were identified as below grade level. The qualifications were based on the average of students' ELA GPAs in the classroom. This system opened up the unique possibility of identifying gifted students who were achieving below grade level in order to ascertain how teaching practitioners might best serve this subset.

Description of Setting

The setting in which the study was conducted is an elementary school located in a Southern California K–8 school district. The district is well known for its academic success and is an attraction for families looking to move into the area. The school, Sunshine Elementary, is identified as a Title 1 school due to at-risk factors, such as lower socio-economic status of families. The racial and ethnic composition of the school is composed of 11.1% Black or African American, 7.4 % Asian, 5.5 % Filipino, 52.9% Hispanic or Latino, 0.1% Native Hawaiian or Pacific Islander, 17.7% White, and two or

more races at 3.1%. Socioeconomically disadvantaged households comprises 44.7% of the student population and 11.8% are English language learners. Foster youth present as 0.8% of the student population and students with disabilities represent 14.3% of the student population. Not represented in the school's data are the students of Middle Eastern descent and Native Americans present in this specific classroom's demographic. It may be possible these students felt best represented by the category of 2 or more races or intentionally chose not to disclose that information.

The researcher conducted the study in a multiple subject and self-contained second-grade classroom. All data was collected within the classroom setting.

Role of Researcher and Collaboration

The classroom in which the research was conducted is under a job-share contract in which the teacher-researcher is in the classroom two days a week; for the purpose of this research project, the teacher researcher was the primary teacher during the small group sessions on designated instructional days for the duration of the data collection. The data collection took place on the teacher-researcher's assigned days, with the exception of the second set of interim results during Research Period 2. Due to the organic nature of flexible differentiation, the teacher-researcher determined that the selected schedule reflected the amount of times a focus skill would be reasonably covered in a self-contained classroom.

An additional element of collaboration in this research is the way in which the focus skills (standards) were selected through polyangulation with other second-grade colleagues as well as members of the administration and third-grade team at the same school site.

Participants

The sample of participants in this study is referred to as a stratified convenience sample. This term indicates that although the students are a sample of convenience for the teacher-researcher, a panel of their teachers from last year carefully stratified the distribution of students among the next grade level, therefore seeking to create classrooms which contain a balanced and heterogeneous group. Factors that are considered when balancing classes include gender, academic achievement, behavior, reading level, home and parent support, and independence in learning.

Justification for Participants

Aside from the researcher being one of two regular teachers within the classroom in which the research was conducted, the use of this class was justified in that the students were already familiar with the fluid differentiation structure. The students had been involved in the procedures of fluid and flexible differentiation since the second week of the 2018–2019 school year, therefore eliminating a threat to instrument validity as it removed the need for a training margin. As discussed in Chapter 2, classroom management constitutes a major aspect of the utilization of a flexible structure, as it often requires student self-efficacy, established through consistent and clear instructions and procedures. At 22 students, the sample was composed of an average number of students in a second-grade, self-contained, elementary classroom in the district and allowed for a reasonable amount of students to block and match among groups.

Sample Characteristics

The sample's racial composition was 0.05% Chinese, 20% White, 0.08% Native American or Alaskan Native, 16% Black or African American, and 26% Filipino, with

the additional declining to comment or information not available. Forty-one percent of the class identified as male and 59% of the class identified as female per registration paper work completed by parents. Twenty-six percent of the sample was designated as English language learners, with three of those students being redesignated as proficient a month prior to the data collection. For the purpose of this research, they were still considered as language learners, although their recent redesignation was noted. Seventy-nine percent of the class was categorized as independent learners by their first-grade teacher. This term indicated that the student possessed self-efficacy in a classroom setting. The remaining students required some type of teaching modification or intervention to monitor the progress of their class assignments. Fifty-four percent of the class entered second grade at or above grade level in reading according to district assessments.

The sample remained consistent during the time of the study. One student left the class prior to the beginning of data collection due to a change in housing that was outside district boundaries. Such a change posed no threat to the validity of data collection.

Data Collection Measures, Instruments, and Tools

Several measures and instruments were implemented in order to provide solid research that provides further insight in the area of differentiation in the self-contained elementary school classroom. Quantitative measures included a standard-based rubric system that used ordinal numbers with a coding system to provide operational definitions for each construct and average of achievement grouping levels based on English language arts GPA and the Behavior Affect Questionnaire administered to ELL students and those classified as gifted, twice-exceptional, or academically talented. Open coding observation measures through the use of a behavior tracking chart from the first research period were

refined into structured observations by modifying the Differentiated Classroom Observation Scale (DPOS) (Cassaday et al., 2004) for use by a researcher-within perspective. Qualitative measures included a semi-structured interview with selected students and a personal reflection journal kept by the researcher to support these records.

Flexible Grouping Rubric

Using the content analysis method, a rubric was developed giving operational definitions for the categories in each of the two ELA focus standards: 1= Below Grade Level in Standard (student scored less than 6 correct out of 10 grade-level examples); 2 = Approaching Grade Level in Standard (students scored 6–7 correct out of 10 grade-level examples); 3 = Grade Level Mastery of Standard (student scored 8–9 correct out of 10 grade-level examples); 4 = Above Grade Level in Standard (student scored 9–10 correct out of 10 grade-level examples plus correctly answered at least one of the above grade-level examples correctly).

It is important to note that teacher background knowledge and in-depth understanding of students and the standards played a critical juncture in this system of formative assessment. Unlike computer diagnostic tools, the teacher may use insight based on background knowledge of students and state standards. Therefore adjustments were permitted if the teacher-researcher noted that a student's error was due to format, penmanship, or other influencing factors specific to that student. In order to prevent researcher bias, any adjustments made to the scoring were documented along with the reason the researcher found it to be necessary.

The aforementioned rubric can be found in Appendix B and lists the characteristics for each of the aforementioned constructs and their operational definition.

It is important to note that the rubric was adjusted for RI.2.5 to reflect specific skills for each level on the rubric, instead of a percentage correct. This key difference is reflected on the rubric in Appendix B.

Additionally, at the end of each four-week period, the results were coded to identify how often this system allowed the teacher-practitioner to identify areas of aberration in a student's performance in contrast to his overall academic level and achievement. An example of this would be a student who was identified as average in academic performance but performed above grade level in a specific skill or a student who was identified as academically talented but demonstrated a deficiency in a particular skill. The goal of this component was to identify the statistical significance of ongoing formative assessment and fluid grouping in meeting the needs of students.

Rubric development and pilot period. The researcher developed the rubric system used in this study over the course of a 19-year period in the classroom. During the first portion of the 2018–2019 school year, prior to data collection, the teacher refined and piloted the rubric system to prepare for the upcoming research.

Pre- and post-treatment assessments. Student pre-treatment work samples were used to provide a baseline of student performance in each selected focus skill. This was accomplished by having each student perform a pre-assessment, referred to as a "Quick Check," on each focus skill prior to data collection to obtain a baseline score for each student. In the treatment group, this pre-assessment also served to provide a RBS in order to correctly place them in their flexible groupings at the onset of each four week period of data collection. A comparable post-assessment was applied at the end of each data collection period to measure the impact of the treatment. The rubric outcome score (ROS)

was based on the post-assessment. The pre-assessments provided an additional point of comparison, with the participants serving as their own controls within the treatment group. The students' work was measured based on the 4-point rubric developed by the researcher.

Student Affect Questionnaire

The Student Affect Questionnaire (SAQ), as shown in Figure 3.2, was based on the Literacy Activities Questionnaire by Reading Recovery Council of North America (2010). The 10-question Likert scale format was administered to all participants one time per treatment week of the second research period, immediately following the last small group for the week. This measure provided ordinal data on students' attitude toward small group learning and identified the way it affects their feelings towards the learning process. The questionnaire used face emoticons to provide instrument reliability and provide an age appropriate way for students to connect to and answer the questions. To ensure a higher level of reliability, questionnaires were kept anonymous. Instructions prior to the administration of the questionnaire included informing the participants that there were no right or wrong answers and that their responses would not result in a grade. The teacher-researcher read the questionnaire aloud to the students to ensure that reading ability did not interfere with students' understanding of each statement. The researcher placed codes that identified if the student was in a target subset. The students remained unaware of what these codes indicated. The questionnaires were organized in treatment and control groups for further comparative purposes.

1. The activities I did in small group today made me want to learn more.
   □ □ □

2. Working in small groups with my classmates makes me want to learn more.
   □ □ □

3. Small groups made learning more fun for me this week.
   □ □ □

4. The things I learned in small groups this week helped me learn new things.
   □ □ □

5. Small groups helped me notice new things I hadn't noticed before.
   □ □ □

6. This week's small group activities were not too easy and not too hard, they were "just right." (Like Goldilocks) □ □ □

7. Compared with my friends I did well in small groups this week.
   □ □ □

8. I worried about what other people thought about me during small groups.
   □ □ □

9. I felt good about learning in small groups this week.
   □ □ □

10. I learned by listening to others.
    □ □

Figure 3.2 Sample of questions from student affect questionnaire.

Additional Quantitative Measures and Validity

Student GPA was used to provide an AVAG as a comparative tool to the rubric system. Students' average GPA among reading, writing, and language were calculated to provide this comparison with their rubric score and also to help form the control groupings.

Behavior Tracking Form

A behavior tracking form in chart format was provided during the first research period to document observed behaviors. The following terms were used to code observed behavior during the observations: frustration, perseverance, enlightenment (an "aha!" moment), lack of motivation, intrinsic motivation, level of engagement (high or low), and level of engagement (high or low). The additional codes of peripheral participation and use of academic language were added for ELL students. These observed behaviors were identified by the researcher through the development of the theoretical framework of this research as target areas within the affective domain as it pertains to differentiated instruction. The codes specific to ELL students were developed based on characteristics identified through the development of the theoretical framework as core to that subset of students.

Open, Semi-Structured, and Structured Observation

Within the course of the two data collection periods, the researcher made anecdotal observations to support any changes in student placement and to provide additional insight into reasons for the achievement and affective outcomes of the participants. Fluidity in student placement is necessary to support the construct of flexible differentiation. The researcher embedded reflection through the use of anecdotal records based on observation, which provided a timely record of insight into the small group sessions and first-hand knowledge from the teacher-researcher as behavior occurred. Anecdotal recordings also provided the opportunity to record any anomalies during the small group sessions that might help to understand outcomes (Efron & Ravid, 2013). Although this form of data collection presents the added challenge of balancing the role

of the teacher with the observer for a researcher-within approach, the opportunity for reflexivity supports the cyclical nature of action research in which observation informs practice (Dewey, 1939; Efron & Ravid, 2013).

The researcher used a daily small group log to provide an on-going view of the materials, resources, group members, and activities. In addition, a personal reflective journal provided further triangulation for the coded observations made during the study. The personal reflective journal served to document emerging thoughts and connections between observed student behavior and students' progress in the identified ELA standards.

Differentiated Classroom Observation Scale (DCOS)

At the conclusion of the first research portion, the researcher reviewed the notes taken during that period to identify patterns of thoughts and inquiry. After analyzing these identified patterns, the teacher-researcher polyangulated the thoughts and inquiries with the Differentiated Classroom Observation Scale (DCOS), developed by Cassady et al. (2004), to provide increasingly structured observation for the second research portion. This process encapsulated the cyclical approach of the action research methodology by providing a process of reflection leading to action (Merriam & Tisdell, 2013).

The researcher modified the DCOS (Cassady et al., 2004) in order to make the procedure manageable for a researcher-within. From the position of a researcher-within, it was not reasonably possible to make notations for each five-minute segment. Instead, the teacher-researcher made notations per group, which was on average a 10- to 15-minute period of time. The teacher-researcher posited that this modification was counteracted by the rich perspective offered by the researcher-within, who has detailed

understanding and knowledge of the students; as opposed to an outside observer, for whom the DCOS was originally designed.

The DCOS scoring form was conducted once every two small group sessions at a rate of approximately one time per week. For each group, the treatment and control students were first scored on their level of engagement by a scale of low, medium, and high. Next, they were given scores on a Likert scale from one to three in regards to the following cognitive areas: remember, understand, apply, analyze, evaluate, and create. These categories overlapped with the constructs used during Research Period 1 to categorize the items on the pre- and post-assessments. The first two categories overlapped with academic language of the discipline, the second two overlapped with using text features, and the last two overlapped with depth of knowledge (DOK). The DCOS formalized and provided a concrete method of identifying abstract processes of observation within the classroom for the purposes of inquiry, which connects to both the action research methodology and Dewey's theory of inquiry (Creswell, 2013; Dewey, 1939).

Semi-Structured Interview

At the end of each research period, semi-structured interviews were conducted with select students that had raised questions for the researcher either through quantitative findings or anecdotal recordings. The researcher tried to maintain a balance of subsets between students selected for the post-interview. The interviews provided the opportunity for the students to have a voice in the research and reflected the goals of action research methodology as well as providing a narrative inquiry element in which the qualitative data can be used to support quantitative findings, allowing the students'

journey through flexible differentiation to be expressed (Efron & Ravid, 2013; Merriam & Tisdell, 2016). Students were informed that their responses did not produce a grade and that there were no right or wrong answers. The teacher-researcher encouraged the student-participants to share openly by letting them know their answers would help provide them with the best learning experience. A challenge of the interview format can be articulation issues (Creswell, 2013). The teacher-researcher's eight months of prior interaction with the student-participants and knowledge of the way they communicate helped allay any interference that articulation might produce.

Issues of Instrument Validity

The researcher addressed face validity through the polyangulation of the panel of teachers and administrators in regards to the operational values given to each level on the rubric. Construct and internal validity were addressed through the statement of positionality and by including samples of the assessments the researcher used for the quick check assessments (Appendix A). Through the utilization of a journaling dialogue, the reflexive nature (Merriam & Tisdell, 2016) of action research is addressed and provides for "critical subjectivity" (Herr & Anderson, 2015, p. 73).

Additionally, the researcher posited that, along with sound research practices supporting the aforementioned validities, justifiable research addresses the ways in which it maintains its relevance to current discourse and devotes itself to the contribution of scholarly conversation and the promotion of instructional strategies that are responsive to the ecological factors in which it is situated.

Potential challenges in data collection include changes in class schedule due to school events and student absences.

Research Procedure

The teacher-researcher employed the intervention procedure twice a week during the course of the 10-week study, providing each intervention group with seven sessions of instruction. This schedule simulated the quantity of times one standard would realistically be covered in a true spiral review format used in flexible small groups and prevented the extraneous factor of excessive exposure to the skill from interfering with a true signal. In other words, the researcher wished to ensure that the treatment could be identified as producing the measurable outcomes.

First, both groups of students participated in a whole group "mini-lesson" on the focus skill in which they do an interactive "I Do–You Do" approach.

- The mini-lesson for RI.2.5 was sourced from the district's adopted language arts curriculum, California Wonders, and is labeled as Genre: Expository Text Mini-Lesson. This lesson is in Unit 3 Week 2 of the curriculum and focused on the expository text *Tornado!* The students used their California Reading Writing Workshop Text, pages 230–231 to follow along with the lesson, which also was projected onto the whiteboard digitally using the link from California Wonder's website, ConnectEd (Wonders, 2017). Additionally, the students were introduced to text features including an index and a table of contents.
- The mini-lesson for L.2.1e was based on Unit 4 Week 4 of the second-grade CA Wonders curriculum (August et al., 2017). Students used whiteboards to participate in an interactive mini-lesson on the past tense irregular verbs and were introduced to the verbs run, come, hide, do, tell, and go.

Following the mini-lesson, all students completed a quick check assessment on the introduced focus skill. The need for authenticity must be balanced with making the information easily translated to the rubric. Students completed a page of 12 examples of the skill. The first 10 examples represented grade-level appropriate questions and the last 2 were bonus questions, representing above-grade-level work. The format of the page was designed to be simple so as to rule out the extraneous threat of worksheet confusion on the construct validity of this assignment. This comprised the student sample. For the pre-assessment on skill RI.2.5, the teacher-researcher used a one-to-one oral assessment of each student on their knowledge and use of informational text features. This format prevented extraneous factors, such as reading and writing ability, from helping the teacher to identify true ability in that skill. For the pre-assessment on L.2.1, the teacher administered the test in whole group and pencil/paper format. Each question or example was read aloud to the students during a whole class to prevent reading ability from becoming an extraneous factor.

The data from the quick check was translated to the rubric using ordinal measures to categorize student performance in the skill. This formative assessment provided their rubric baseline score (RBS). In scoring the students according to the rubric on skill RI.2.5, specific guidelines were provided to describe the behaviors students should exhibit for each category. An important distinction was made for the Level 3 category, in which the student must be able to perform the task of identifying at least three text features, even if they are able to make some connections from the text using text features. The teacher-researcher acknowledged that while using text features to make connections within the text shows a deeper depth of knowledge (DOK), for the purposes of flexible grouping,

this skill would not be covered with as much depth in Level 3 in order to make time to help Level 3 students develop critical thinking skills in regards to the text in order to bridge to Level 4. Thus, the teacher-researcher posited that a student who could not demonstrate the preliminary skill of identifying text features in informational text must first receive instruction in Level 2 as defined in the rubric, where that skill was covered at the level of instruction they needed.

Students from the treatment group received instruction in fluid groups that reflected their RBS for a period of four weeks. The small group instruction consisted of 10-minute blocks per group. Students from the control group received identical amounts of time and lessons in small groups based on their AVAG for the same four weeks. The treatment and control participants were blended in their groupings, therefore receiving identical instruction in the focus skill, thus preventing a threat of bias in the findings.

The goal of each rubric level is to bridge students to the next level. The small group lessons were sourced from the California Wonders Curriculum (August et al., 2017) and were based on the sequence of material spanning first to fourth grade. The researcher reviewed first-grade skills to identify which skills were prerequisites, while fourth-grade skills were isolated to indicate ways in which the advanced students who were already above grade level could be challenged.

The small group lessons for the focus skill RI.2.5 during the first four-week period consisted of the students being provided with leveled readers from the CA Wonders series and covering the following skills:

1. RBS Level 1/Below Grade Level:
    a. Features of informational text

b. How pictures can help us understand the story

c. Identifying and using captions

d. Identifying subheadings and bolded words

2. RBS Level 2/AVAG Approaching Grade Level:

    a. All of the above

    b. Retell key details from the text

    c. Identifying why words and subheadings are in bold

    d. Identify key details from the subheadings

3. Rubric Level 3/AVAG Proficient:

    a. All of the above

    b. Identify the topic and how they know

    c. Independently identify the text features: sidebar, diagrams, etc.

    d. Identify additional information from pictures and captions

4. RBS Level 4/AVAG Academically Talented and Advanced

    a. All of the above

    b. Use text features to identify and infer information and definitions

The teacher-researcher monitored students' ability to access the provided text.

The small group lessons for the focus skill L.2.1e during the second four-week period consisted of the following focus for each level:

1. RBS Level 1/AVAG Below Grade Level: A review of the first-grade skills using the verbs see, do, go, have, and be. First-grade mini lessons from the CA Wonders curriculum were used as a guide.

2. RBS Level 2/AVAG Approaching Grade Level: Mini-Lessons from the second-grade CA Wonders curriculum were used as a guide. Students continued to focus on verbs see, do, go, have, and be.
3. RBS Level 3/AVAG Proficient: In addition to a review of second-grade verbs, students added the verbs hide, run, and came to help them bridge to third grade. Students are required to use the words to form original sentences.
4. RBS Level 4/AVAG Academically Talented and Advanced: Students will be provided with proofreading activities based on fourth-grade examples.

A post-assessment was delivered after each four-week period of instruction in the fluid groupings. This predetermined timeframe is consistent with Efron and Ravid's (2013) recommendations for a quantitative measure. The post-assessment provided the ROS.

During the course of each four-week period, students in the treatment group that demonstrated an operational mastery of the skill or a change in mastery level were anecdotally noted and moved accordingly prior to the four-week mark. AVAG placement did not shift based on teacher observation; rather, they remained stagnant. If a decision was made to move a student in the treatment group based on observations prior to the four-week mark, notes on student behavior leading to the decision were recorded. It should be noted that during the second replication, the teacher-researcher used a pencil/paper quiz to assess the need for placement changes for the treatment group at the end of the first week. These quizzes, referred to as interim quizzes, were designed and approved by the second-grade team at the school where the research took place and

aligned with the district-adopted curriculum. This information provided instrument validity for this interim quizzes.

After reviewing the results of the interim quiz administered at the end of week one of the second replication, the researcher noted that all students except one had reached proficiency or above grade level in focus skill L.2.1. In order to ensure these results were compatible with the pretest, the researcher then administered the posttest for L.2.1 prior to administering treatment in the second week. The posttest confirmed that all students in the treatment group had met proficiency or above grade level according to the rubric during the first week of small group instruction. The post-assessment revealed that a total of two students in the control group had not met proficiency, including the student that had struggled on the interim quiz.

The researcher realized that the very nature of action research required reflexivity in the intervention as applied to the treatment group (Efron & Ravid, 2013; Merriam & Tisdell, 2016). Dewey's theory of inquiry (1939) also lays the framework for a researcher to remain consistent in cycling back in a reflective process. Vygotsky's sociocultural theory of learning (1978), in which this research is situated, requires teachers to attend to children's zone of proximal development. Based on the foundational methodology, theory, and inquiry structure of this research, the teacher-researcher recognized the need to make adjustments to the plan of action. By doing so, the researcher ensured fidelity to the conceptual framework of the research and the nature of action research, which is to examine one's own teaching practice and to be in a constant state of making decisions that elevate instructional techniques (Abrams, 2019). After considering several options that would both honor the purpose of flexible differentiation and the methodology and

theory upon which this research is built, the researcher decided that the instruction would shift to applying irregular past tense verbs in original writing samples, recognizing the need to attend to a higher level of learning according to Bloom's taxonomy, as discussed in Chapter 2. This means that aside from providing the students with the verbs they must use, the writing remained unscripted and did not included dictations. Since control and treatment groups were blended during small group instruction, it was impossible to separate the control group from the new instruction. In order to address this, all students completed a writing sample that included five verbs to use in the irregular past tense. The researcher then based the treatment group's placement according to these new formative assessments. The control groups remained in their AVAG placements. However, the writing sample provided each student's starting level on her ability to apply irregular past tense verbs to their writing, including correct orthographical features. The student who did not meet proficiency was not affected by this shift, as he was in the control group. In addition to the interim quizzes, the teacher-researcher also used observation to make placement changes within the treatment group as necessary. Later on, these observations resulted in some students from the treatment group being placed in a lower level placement. The researcher did not revise the original rubric for this standard but rather gave the students a raw score of how many out of the five verbs they were able to use correctly in their writing. The researcher also evaluated the students' ability to write fluidly while applying this skill. Some students in the treatment group who exhibited an inability to move to paragraph narrative form and produced sentences that did not tell a story received a placement that reflected this need. This method reflects the natural way in which a teacher would effectively use on-going formative assessment in a busy

classroom. Student placement in the treatment groups was reviewed once a week during both replications.

At the end of the seven instructional small group sessions, the students demonstrated their achievement in the focus standard through a post-assessment. The first replication was followed by spring break, in which the students did not attend school for one week. In the fifth week of research, a new focus skill was introduced through a mini-lesson and the researcher administered the pre-assessment. Then, the researcher employed the cross over design and replicated the research procedure for another four-week period in which students participated in seven instructional small group sessions on the new focus skill. Following the completion of the seven sessions, the students received another post-assessment to determine losses or gains in their achievement in the focus skill. In addition, a counterbalancing technique was employed in order to prevent multiple measures validity threats.

Research Protocols

During the first replication, the pre- and post-assessments were conducted in a one-to-one format, which the teacher-researcher identified as a reliable way to assess the students' authentic knowledge of the skill without allowing reading or writing ability to produce extraneous noise. The quick check assessments, which served as the formative and post-treatment measures in the second replication, were administered using test-taking procedures already established in the classroom where the study took place. These procedures included the use of privacy blocks at desks to ensure autonomy and a quiet environment. The Student Affect Questionnaires used the same procedures and were read aloud to the students. In order to protect sensitive and personal information, a numeral,

rather than a student's first name, was used as an identifier tool to organize the collected data by student.

Transcription, Data Entry, and Organization

Both qualitative and quantitative data were transcribed and entered using specific processes and organization to help facilitate the interpretation and comparison of data at the end of the study. Qualitative data was based on coded observation and quantitative data consisted of three measures that were used to compare and contrast outcomes.

Qualitative Data

Qualitative data was achieved through anecdotal recordings, a behavior tracking chart, and semi-structured interviews. As previously discussed, a behavior-tracking chart that employed coding was used to assist the researcher in comparing and contrasting descriptive findings while being a researcher within. When a coded behavior was observed during a small group session, the corresponding category was marked next to the numerical identifier on the behavior tracking chart. This chart was replaced by the DCOS during the second research period to provide an improved way of recording information from the perspective of a researcher within.

The DCOS recorded the levels of engagement for both treatment and control groups, the level to which instruction aligned with students' prior knowledge, and an assessment of the level to which students in each group participated in activities that represented the taxonomy of learning levels. The researcher also documented details of what was covered in each small group on the small group activity form in order to provide context to the anecdotal observations.

Quantitative Data

Three instruments were used to categorize student levels. In order to best use the data from each instrument and effectively compare it to the other two, the researcher designed a chart for each focus standard. The charts provided a way to compare the data from all three categories side by side. The first category listed the student's RBG based on student's pre-assessment in the focus standard. The second category listed the student's ROS at the end of each four-week session based on the student's post-assessment on the focus standard, and the third column listed the students GPA. For each four-week session, the researcher provided a separate chart for both the control and treatment groups, for a total of four charts.

In order to attain an RBG and ROS for each standard, the researcher created a chart to record the score the researcher gave each child on each pre-assessment and the overall outcome based upon these two scores. This process was repeated for each pre- and post-assessment.

The researcher also administered The Behavior Affect Questionnaire, a Likert scale form that gave student-participants the opportunity to express their perspective on the small group learning experience.

Cleaning Process

After each treatment session, the researcher reviewed the anecdotal notes taken that day at the earliest possible opportunity to reinforce with any additional notes or observations. All data collected, including student samples, were kept in a single binder and were filed daily and kept in a locked filing cabinet.

Treatment, Processing, and Analysis of Data

Following the collection of data, the researcher used a combination of qualitative and quantitative strategies to process the information. The mixed-methods approach was used as an embedded form of triangulation to give added context and clarity. The data was organized by question for the process of analysis.

Research Question 1

Research Question 1 asked: What are the measurable impacts, as indicated by student achievement, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction?

A content analysis of the average of students' overall English language arts GPA was conducted and compared to their starting rubric scores, or RBS. A discrepancy between their GPA and rubric scores indicated the ability of flexible differentiation to identify areas of strength and weakness outside of a student's performance category. Additionally, each student's growth in the two core standards was compared to their RBS in those specific core standards to measure growth. Measures of central tendency were used to provide measurement of growth and achievement in correlation to their group membership. Students who maintained proficiency or displayed improvement markers were compared to those who had not increased in their rubric levels. Improvement markers were defined as increasing a rubric level for those who had room for growth on the rubric. Those who were at Level 4 were determined to demonstrate growth based on an itemized analysis of their pre- and post-assessment responses. This analysis was intended to identify the statistical significance of implementing a standards-based formative assessment flexible grouping structure.

Additionally, for Research Period 1, the different categories of questions including LOD, text features, and DOK were analyzed to identify any patterns in student achievement. The teacher-researcher produced an itemized chart for comparison purposes. Although the ELL and academically talented/gifted subsets were too small to run comparisons between the treatment and control groups, their results were analyzed for patterns within the categories of questions to see what impact the flexible differentiation program had on these subsets.

Following this, qualitative data was analyzed through an iterative coding procedure grounded in narrative inquiry. Students who raised significant questions or wonderings for the teacher-researcher were selected as narrative snapshots in which the researcher did a summary of the student's pre- and posttest results and a synthesis of their interview responses with the observations of the teacher researcher. Coded categories were identified and connected to broader themes such as positive and negative affect, positive and negative engagement, and benefits of flexible differentiation.

Research Question 2

Research Question 2 asked: What observable impact does flexible grouping based on RBS have on student affect?

The qualitative information from the behavior tracking chart, small group logs, and student interviews were analyzed through an iterative coding process to identify specific behaviors and patterns during the treatment periods. Students who raised questions throughout the research process and provided significant insight into the ELL and gifted subset were identified, one of each subset in both the treatment and control group.

The behavior tracking chart provided a manageable way of recording observations for a researcher-within. This format represented an open-coding method in which behavior that was applicable to the study was notated during the treatment session for later analysis. The following categories were used for this initial phase of coding: frustration, perseverance, enlightenment (an "aha!" moment), lack of motivation, intrinsic motivation, level of engagement (high or low), and level of engagement (high or low). Axial coding allowed the categorization of these behaviors into main behavioral categories the researcher intended to address. These behavioral categories consisted of engagement and affect. The ELL categories of academic language and peripheral participation were maintained separately. From the axial coding, the researcher then systematically coded these groups into treatment and control categories to identify behaviors present in each group. This step in the process represented theoretical coding and connected back to the researcher's initial intended line of inquiry about the effect of flexible differentiation on student affect (Merriam & Tisdell, 2016). This inductive method of coding capitalized on the natural evolution of the qualitative process of descriptive data and provided a means of isolating the affective behaviors according to the treatment or control group.

During both research periods, pre- and post-assessments were itemized in order to identify patterns that emerged for these identified students. The researcher then cycled back to the theory to make connections that helped explain the patterns. Identifying these patterns and connecting them to the theory provided a foundation for further discussion and conclusions.

In Research Period 2, the structured observations conducted with the DCOS (Cassaday et al., 2004) provided data to calculate measures of central tendency through finding the mean of each category. First, the teacher-researcher conducted a frequency analysis and then calculated the overall mean of each group's engagement scores over the four-week period. The same process was repeated for each of the cognitive areas

Research Question 3

Research Question 3 asked: How are the needs of students who present as twice exceptional, gifted, and advanced addressed using flexible groups identified by the RBS (formative assessment)?

The researcher analyzed the RBS to identify how often a student who identified as twice exceptional, gifted, or advanced had a ROS that differed from their academic student designation or AVAG. Additionally, the researcher created a chart for the twice exceptional, gifted, or advanced subset in which the items form the pre- and post-assessment from the first replication covering RI.2.5 were itemized in order to identify specific areas of growth. Since many of these students scored a 4 on the pre-assessment, it is necessary to look at the individual assessments in more detail to identify growth in this subset.

A narrative inquiry approach was used to triangulate the aforementioned data by providing the students with a voice through the use of semi-structured interviews, behavior tracking chart data, and anecdotal observations. These qualitative components were synthesized to narrate a story of the individual student's journey through differentiated learning as a member of this subset. Graphic organizers were designed to

help display the data and give a linear perspective on how the data blends to create a descriptive picture.

Although the sample sizes were too small to provide comparisons between the gifted and control groups, the behavior affect questionnaires taken by the ELL and twice exceptional, gifted, and advanced subsets provided the patterns to identify any recurring connections to the codes that were associated with each question. To provide quantitative measures, the student data from the SAQ was divided between those in the treatment group and those in the control group. A graphic organizer provided a comparison between the positive affective outcomes related to flexible differentiation for both the treatment and control groups.

Research Question 4

Research Question 4 asked: How are the needs of ELL students addressed using flexible groups as identified by the RBS (formative assessment)?

ELL student scores were analyzed to identify their academic growth in each standard. The researcher created a graphic organizer in which the ELL students' pre- and post-assessments were itemized by question asked during the 1:1 assessment. Each question was coded under the following categories: Language of the Discipline, Use of Text Features, and Depth of Knowledge (DOK).

These categories allowed the researcher to identify the way each ELL student developed in individual areas important to reading informational text as outlined by RI.2.5. Table 3.1 identifies the coded categories.

Table 3.1

Coded Categories for Pre-Assessment

Category	**Questions that Address Category**
Language of the Discipline	1, 2, 8, 9
Use of Text Features	3, 6, 7, 10
Depth of Knowledge	4, 5, 11, 12

In order to demonstrate a deeper understanding of the context and students, elements of narrative inquiry were used to provide a qualitative lens on the ELL students' development throughout the study. In Research Period 1, data collected during the semi-structured interviews, behavior tracking chart, and anecdotal observations were synthesized to create a narrative that expressed the ELL students' journey through flexible differentiation. An iterative coding procedure first identified recurring patterns or scenarios of importance and connected them with a code (Efron & Ravid, 2013). Then the researcher identified the main themes as developed by the theoretical framework, providing a grounded analysis that included positive and negative engagement, positive and negative affect, negative and positive self-perception, and benefits of differentiation (Merriam & Tisdell, 2016). The coding categories of peripheral participation and use of academic language were added to provide clarity on issues specific to ELL students.

Additional Areas of Validity

The following areas of validity based on Herr and Anderson (2015) were also addressed in the study:

1. Outcome validity in the study was achieved through its contribution to the conversation of differentiated instruction within our district, incorporating further questions.
2. Process validity was addressed by maintaining a classroom, not laboratory environment, for the class.
3. Catalytic validity was found in the attention brought to learners typically underserved within the classroom, such as twice-exceptional students.
4. Democratic validity was seen through the special attention to local contexts.
5. Dialogic validity was addressed through triangulation of constructs as well as through conversations with a panel of critical friends.

Transferability of these findings is limited to second-grade classrooms with similar composition in the teacher-researcher's district. Further replications need to be conducted in order to apply it to other ecological conditions such as mathematical curriculum, other grade levels, and different demographics. Although mostly aimed at identifying best differentiation practices in the local setting and in the teacher-researcher's own classroom, information from this study can be used as a contribution to conversation on best differentiation practices in a self-contained elementary school classroom.

Summary

Flexible differentiation poses the opportunity to address the increasing challenges of intersecting identities found within the self-contained elementary classroom. The researcher identified the problem of practice as determining the measurable impact, as indicated by student achievement, of a standard-based formative assessment and fluid

grouping approach when used in differentiated group instruction. Additionally, the researcher sought to identify the benefits of flexible differentiation to individual subsets within the self-contained classroom that are often underserved, such as the twice-exceptional population, advanced students, and English language learners. The research design is described as a mixed methods approach with a cross-sectional time frame. A switching replications format and a within-subjects crossover design is employed. The process of randomized stratification formed the control and intervention groups within the convenience sample.

The researcher employed a flexible differentiated learning structure in a small group format within a fluid classroom model as the intervention. Formative assessment was used to categorize students within the flexible groupings. Ongoing assessment and observation were used to maintain the fluidity of groups within the treatment group. In contrast, the control group was based on student GPA and overall academic achievement. Subsets of students were identified to provide a block and match between the intervention and control groups. The identified subsets included gifted, twice exceptional, language learning populations, advanced, proficient, approaching proficiency, and below grade level.

The study was conducted in a Southern California K–8 school district. The school, Sunshine Elementary, is considered to be a Title 1 school. All data was collected within a multiple subject and self-contained second-grade classroom. The teacher-researcher was part of a job-share contract in which the teaching contract was shared with another teacher. The research was conducted on the teacher-researcher's primary work days. A job share provided an additional element of triangulation. The participants in the study

provided a justifiable sample, as they were already familiar with the intervention's procedures.

Two second-grade language arts standards from the California Common Core State Standards were identified as the focus skills of the research through a process of triangulation between a panel of second-grade teachers, a panel of third-grade teachers, and school site administration.

Using a content analysis method, the teacher researcher developed a rubric that converted interval data into ordinal numbers that aligned with operational definitions of each level. Teacher observation was also weighted in and carefully notated. The coded rubric system provided a way to identify any aberrations that occurred between student overall achievement and their level of mastery on a single skill. Pre- and post-treatment student samples provided both a baseline of student performance on each focus skill and any growth or regression during the research procedure. The student samples were measured using the four-point rubric developed by the researcher. Additional data, including student GPA, provided for comparative data. Qualitative measures included coded and anecdotal observation to support the reflexive and cyclical aspects of action research.

The research procedure was employed twice a week during the course of the study. The following process outlines the research procedure: standard-based mini-lesson, pre-assessment, transcribing interval data to ordinal data on the rubric to form flexible groupings, implementation of small groups, followed by a post-treatment assessment at the end of each four-week period. This procedure was repeated with the second focus skill. During the course of each four-week period, students within the treatment group

were grouped flexibly and students in the control group remained in stagnant groupings based on their language arts GPA.

Qualitative data was gathered by means of observation and anecdotal recordings. The anecdotal information was coded to identify specific behaviors and then a frequency analysis was employed to identify the number of times particular behaviors occurred. Additionally, the data from the coded anecdotal records was extracted and used to calculate percentages of each affective behavior per student category. Three different instruments were used to categorize students quantitatively. These results were transcribed on to charts. A content analysis of each student's GPA was calculated to compare and contrast to the rubric score. Scores of students identified as ELL or twice exceptional were examined to identify the impact for these subsets. Issues of validity were addressed at length in order to underpin the transferability of the research.

Chapter 4

Presentation and Analysis of Data

The research contained within this study seeks to explore the relationship between formative assessment measures for the structuring of fluid and flexible groups and student achievement in language arts skills. The problem of practice addressed the timely concern of meeting the needs of an increasingly diverse population of students within a self-contained elementary school classroom through the use of formative assessment to structure flexible differentiated small groups. Due to the correlation of decreased entry-level skills and low-socioeconomic status, recent economic trends within the last 10 years threaten to increase the spectrum of students an elementary classroom teacher is expected to service (Aurwater & Aruguete, 2008; Musu-Gillette et al., 2017; Reardon & Portilla, 2015).

This identified problem of practice also presents potential for meeting current discourse and trends at the local level as the district increased its emphasis on small group instructional practices over the last five years. The local district has presented a goal of 60% of ELA instruction to be done in small groups on a daily basis. This emphasis on small group instruction presents the challenge of how to most effectively group students and maximize instructional minutes with the already diverse student population within one self-contained classroom. This study seeks to establish practices that are situated in Vygotsky's zone of proximal development (1978) and the use of

formative instruction to identify “patterns of need” (Varla, 2010, par. 2) present within a self-contained classroom.

Sample Characteristics

A convenience sample of the researcher’s 24 students composed the study’s participants. The composition of the class was carefully balanced by a panel of their prior teachers based on a range of characteristics, including academics, behavior, parent involvement, and gender. The researcher separated the participants into treatment and control groups, in which these characteristics were blocked and matched as closely as possible. The racial composition of the participants included 0.05% Chinese, 20% White, 0.08% Native American or Alaskan Native, 16% Black or African American, and 26% Filipino, with the additional percentage declining to comment or information was not available. Forty-one percent of the class identified as male and 59% of the class identified as female per the registration paper work completed by parents. Twenty-six percent of the sample was designated as ELL, including three students recently redesignated as proficient a month prior to the data collection. For the purpose of this research, they were still considered to be language learners. Seventy-nine percent of the class was categorized as independent learners by their previous teacher in first grade. This term indicated that the student possessed self-efficacy in a classroom setting. The remaining students required some type of teaching modification or intervention to monitor the progress of their class assignments. Fifty-four percent of the class entered second grade at or above grade level in reading ability.

Data Collection Measures

Data collection tools included a blend of qualitative and quantitative measures in order to deliver descriptive data to gain further insight into how each student experienced the differentiated instruction and identified insight into their academic and affective outcomes. The quantitative measures included pre- and post-tests administered during each of two research periods, respective to the skill addressed in that research period, and the student affect questionnaire, provided to students in a Likert scale format using emoticons to express their answer to each statement. Qualitative measures included a behavior tracking chart, which was replaced by the Differentiated Classroom Observation Scoring (DCOS) during the second replication, semi-structured interviews with students that had raised questions for the researcher, and small group logs and anecdotal records.

Intervention

The researcher employed a flexible, small-group, differentiated learning structure in a fluid format situated in Vygotsky's zone of proximal development (1978). Students in the treatment group were placed according to their ability in the focus skill, as displayed on their pre-assessment and according to the teacher-developed rubric. These students' group placements could be moved through the research period as they demonstrated a change in their understanding and mastery of the focus skill. The control group was placed according to the AVAG scores, which were based in the average of their ELA grades. The control group placements remained stagnant.

General Findings and Results

The findings and results in this document outline the mixed methodology the researcher used to collect data. Results follow a linear format and the organization of the

data is divided into quantitative and qualitative sections for each replication period of the research and structured by data collection method. The order of data presentation reflects the explanatory sequential mixed methods design implemented in this study (Creswell, 2013; Efron & Ravid, 2013).

Research Period 1

The first research period covered a span of six weeks, including the pre- and post-assessment, with treatment administered for four of those weeks. During this period, the focus standard addressed during small group instruction was RI.2.5, which addressed the students' use and identification of informational text characteristics and features.

Quantitative measurement tool: The pre- and post-assessment. The primary research tool during the first period of research was the pre- and post-assessment. Students completed a one-to-one assessment of their prior knowledge on informational text features, conducted in an interview format with the teaching-practitioner. The teacher then reviewed the students' answers, and a rubric baseline score (RBS) ordinal marker was assigned to each student according to their performance on this assessment based on the operational and categorical definition in the rubric.

Quantitative data during Research Period 1 was collected through the use of a pre- and post-assessment for the focus skill. In addition, the students' average of achievement (AVAG) provided comparisons in order to identify discrepancies between their overall academic performance and their ability in the focus standard. After four weeks of small group instruction that focused on this skill two times a week, the posttest provided the rubric outcome score (ROS) to identify the level to which students had made progress, maintained, or regressed.

Tables 4.1 and 4.2 display the raw data used to calculate the central tendency values used to indicate growth during Research Period 1 and provides comparison values between the students' AVAG scores and their placement on the rubric. In order to highlight how often the rubric could identify a discrepancy between AVAG scores and a student's ability on a specific skill all students, regardless of placement in treatment or control groups, they were provided with an ordinal marker according to the operational definitions from the rubric.

Table 4.1

Research Period 1 Control Group

Student	RBS	ROS	AVAG	Academic Designation	Special Category	Discrepancy	Improvement
89	3	4	91.6	AT	GS	No	Yes
56	1	4	92	AT	No	Yes	Yes
23	3	4	89.3	P	GS	No	Yes
230	4	4	88	P	ELL GAS	Yes	Yes
67	1	4	84.3	P	No	Yes	Yes
110	2	4	78.6	P	No	Yes	Yes
90	1	2	80.6	P	GS	Yes	Yes
170	1	4	89.3	P	ELL	Yes	Yes
130	1	2	81.3	P	ELL	No	Yes
220	4	4	69.3	AP	GAS	Yes	No (same rubric mark/ decrease in score)
160	2	1	69.3	AP	No	No	No (decrease)

Table 4.2

Research Period 1: Treatment Group

Student	RBS	ROS	AVAG	Academic Designation	Special Category	Discrepancy	Improvement
78	3	4	96.6	AT	GAS	No	Yes
45	1	4	91.6	AT	ELL/GS	Yes	Yes
120	4	4	97.3	AT	GAS	No	Yes
150	2	4	80.3	P	No	Yes	Yes
140	1	1	78.3	P	RSP	Yes	No
180	1	3	84.3	P	ELL	Yes	Yes
200	4	4	85.6	P	GAS	Yes	Maintained
210	1	2	77	P	No	Yes	No
100	1	2	72.6	AP	ELL	Yes	Yes
250	2	2	76	P	No	Yes	No
240	4	4	N/A	AT	SDC/GA	No	Maintained

Approximately 82% of the students in the control group demonstrated improvement by at least one rubric category. For those identified already as a Level 4 (above grade-level performance), their itemized results were analyzed to identify any increase in their raw score. Their verbal responses on the one-to-one assessment were studied to identify increased ability to dialogue about informational text. This additional step helped to acknowledge growth for students at this level who do not have an additional rubric level to increase. Similarly, 82% of the students in the treatment group demonstrated growth or maintenance. Again, students who began at a Level 4 on the rubric required an itemized review of their responses on the post-test to identify growth.

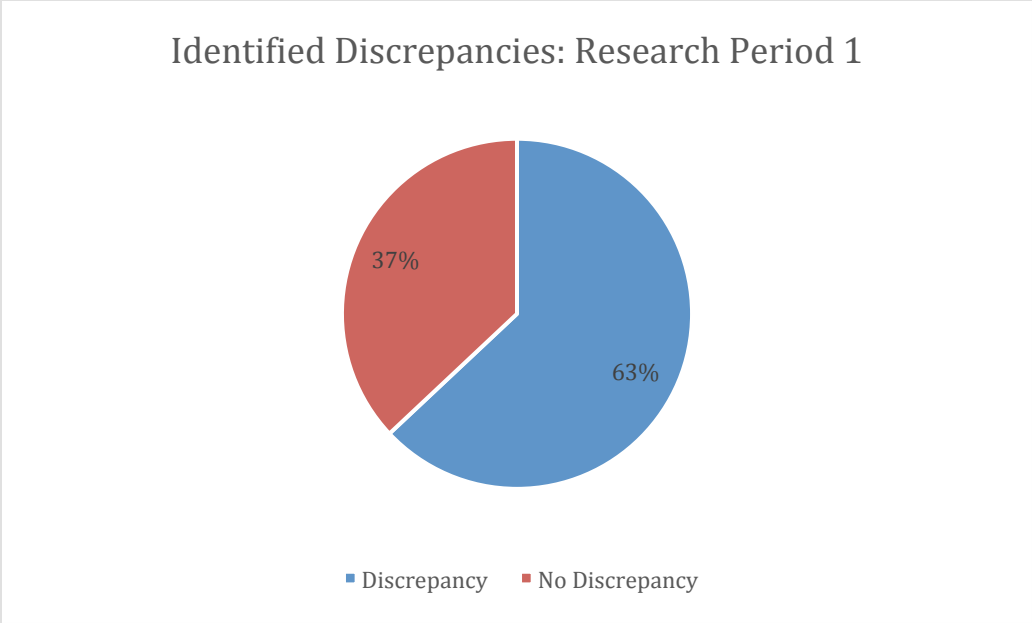

Figure 4.1 Discrepancies between AVAG and rubric score: Research Period 1.

As shown in Figure 4.1, the rubric identified a discrepancy between the AVAG and the student's demonstrated ability in the focus skill, represented by their performance on the pre-assessment, in 63% of students combined between the treatment and control group.

The questions on the pre- and post-assessment were categorized by three types of knowledge: language of the discipline, theoretical framework, and depth of knowledge. These scores were analyzed and compared between the treatment and control group.

All (100%) ELL students in the treatment and control groups demonstrated an increase in both DOK and LOD. While most students identified as gifted academically and/or academically talented in both treatment and control groups demonstrated 100% mastery of the LOD skills on the pretest, all students of this subset in the treatment group demonstrated either maintenance or growth in this area on the post-assessment. In the control group, one student demonstrated a lack of growth in the area of LOD, and in fact,

demonstrated a decrease in the area of DOK. This student, referred to as Cassius in the qualitative notes, demonstrated gifted tendencies in his HOPE scale results but falls in the approaching proficiency according to his AVAG. Although the pre-assessment demonstrated that he was a Level 4 according to the rubric, he was grouped according to his AVAG. All academically gifted and/or talented students in the treatment group demonstrated an increase or maintenance in DOK, despite beginning with a higher occurrence of gaps than the other categories.

Qualitative measurement tools and findings. The teacher-researcher identified four students as those who raised significant questions and insight during Research Period 1. These students were the primary focus for the qualitative portion and the data are organized by student. Each section begins with an analysis of the itemized pre- and posttest results. Following, a combination of their interview responses and teacher observations is provided to further triangulate the student's narrative.

Amy: Control group. Identified as both ELL and gifted socially and academically, Amy demonstrates high motivation in her work. Her academic grades place her in the academically talented subset, while her placement in the ELL subset account for challenges in grammar and syntax. In her one-to-one pre-assessment, she demonstrated challenges in grammar and at times was limited in the way she phrased a sentence. In contrast to this, she demonstrated a high LOD ability. During her post interview, she demonstrated indicators of high engagement through her dialogue but revealed low self-confidence in her learning by stating, "I don't feel I do really good at learning." This statement indicated negative student affect to learning and negative self-perception. She expressed positive perception of small group learning when she shared, "Groups are

different [than the whole group] because we need what we learn. We have different learning stuff." On the behavior tracking chart, she was observed with high engagement and using LOD. She did not demonstrate peripheral participation during the small group but rather demonstrated more introspection.

Cassius: Control group. Identified as gifted academically and socially, Cassius was placed in the approaching proficiency subset in ELA due to his lower AVAG score. He often and enthusiastically participates in whole group discussions in ways that demonstrate mastery of language arts concepts; yet, he struggles with letter formation and mechanics in his paper/pencil tasks. Many of his written assignments receive low scores. During the 1:1 pretest, Cassius demonstrated remarkable articulation of the informational text features and received a high score and a Rubric Level 4. By the end of the four weeks of intervention in stagnant grouping, he did not gain points but rather decreased in the area of DOK.

During his post-interview, he stated, "Small groups seem the same as whole groups." This insight is interesting considering his grouping is not according to his ability but rather according to his overall achievement. Additionally, this may demonstrate that Cassius prefers the oral activities that small group learning presents, much like whole group. During small group learning, Cassius frequently participated, demonstrating positive engagement. A review of the behavior-tracking chart reveals that Cassius demonstrated many behaviors in the theme of positive engagement, including enlightenment, intrinsic motivation, high levels of engagement, and use of LOD.

Aliya: Treatment group. Identified as gifted socially by the HOPE Scale and ELL, Aliya is a conscientious and reserved student. Her school work demonstrates academic

talent. After the first week of Research Period 1, Aliya moved from Group Level 1 to Group Level 2 according to the flexible differentiation model, in which the teacher moves student based on observed or student artifact formative assessment. The teacher-researcher noted this move was due to observations of participation in the small group. The activities did not appear to meet Aliya's needs any longer. After this move during Week 2, Aliya appeared to recognize her potential and acted on it through increased participation, connecting to the theme of positive engagement. Additionally, she demonstrated increased confidence in sharing responses, which falls under the theme of positive self-perception. Once again, Aliya was moved after Week 2 to Group Level 3, in which the goal is to bridge students to Level 4. At the end of the treatment period, Aliya had moved from a Level 1 on the pre-assessment to a Level 4 on the post-assessment.

In her interview, she indicated peripheral participation through the statement, "When we read in small groups and someone says 'caption', it helps me <[earn the new word]." This falls under the themes of peripheral participation and language of the discipline. The behavior-tracking chart also indicated that Aliya demonstrated high level engagement, peripheral participation, and LOD many times throughout the treatment sessions.

Elizabeth: Treatment group. Identified as gifted both socially and academically by the HOPE scale, Elizabeth often turns in assignments incomplete or not at all. She struggles most with organizational tasks and maintaining focus, yet demonstrates a wide range of higher-level knowledge in areas of chemistry and mathematics and at the most recent testing placed at fourth-grade level in reading. During the 1:1 pre-assessment, she demonstrated 100% mastery of all areas. She displays great enthusiasm for learning and

often has a difficult time not interrupting instruction. During small group learning, Elizabeth displayed some frustration at a task, connecting to the negative affect theme. The small group structure provided an opportunity for the teacher-researcher to recognize and address Elizabeth's frustration in a personalized way. Elizabeth's concerns and frustrations were resolved prior to the end of small group learning time, which then became enlightenment. This interaction demonstrates benefits of proximity due to lower student to teacher ratio in small groups. The behavior tracking chart also identified another instance of enlightenment, continuous intrinsic motivation, and high level engagement, which connect with positive affect and positive engagement in Elizabeth's small group learning.

Research Period 2

During the second research period, the teacher-researcher employed the within-subjects crossover model and the treatment and control groups were inversed. Additionally, the focus skill changed to that of L2.1, which addresses students' use of past-tense irregular verbs. The pre- and posttest process once again provided an indication of students' prior knowledge and the outcome following the treatment period. A Likert scale assessed the impact of differentiated small group learning on the effect of students and their perception of learning. Information from the structured observation of DCOS replaced the individual behavior chart used during the first replication.

Quantitative Tool 1: Pre- and post-assessment data. The following charts display the outcomes for the pre-and post-assessment tests, demonstrating the growth made by the students in the focus skill according to the rubric. Although initially the researcher intended for the ROS to be assessed at the end of the four-week period, it

became clear after administering the interim test following Week 1 that the majority of students were ready to move to a higher taxonomy level of learning. In cycling back to the theoretical backbone of this research based on flexible differentiation with on-going formative assessment, the teacher-researcher understood that it was necessary to make revisions in the goals for the students. Without doing so, the basic tenant of the research would be lost. The researcher administered the post-assessment after the first week's treatment sessions to confirm the results of the interim assessment. Once these results were confirmed, the researcher decided to move to a higher level of DOK by focusing on applying past-tense irregular verbs to their writing following the results presented in Table 4.3.

Table 4.3

Research Period 2: Control Group

Student	**RBS**	**ROS**	**AVAG**	**Academic Designation**	**Special Category**	**Discrepancy**	**Improvement**
78	4	4	96.6	AT	GAS	No	Maintained
45	3	4	91.6	AT	ELL/GS	Yes	Yes
120	4	4	97.3	AT	GAS	No	Maintained
150	4	3	80.3	P	No	Yes	No
140	1	3	78.3	P	RSP	Yes	Yes
180	2	4	84.3	P	ELL	Yes	Yes
200	4	4	85.6	P	GAS	Yes	Maintained
210	2	2	77	P	No	Yes	No
100	1	1	72.6	AP	ELL	Yes	No
250	3	4	76	P	No	No	Yes
240	4	4	N/A	AT	SDC/GA	No	Maintained

As seen in Table 4.3, 72% of the students in the control group demonstrated improvement by at least one rubric category during the second research period. Comparatively, 100% of students in the treatment group demonstrated improvement or maintenance in the focus skill. Sixty-eight percent of students, combined between the treatment and control group, presented with identified discrepancies between their AVAG and their demonstrated ability in the skill based on the pre-assessment performance.

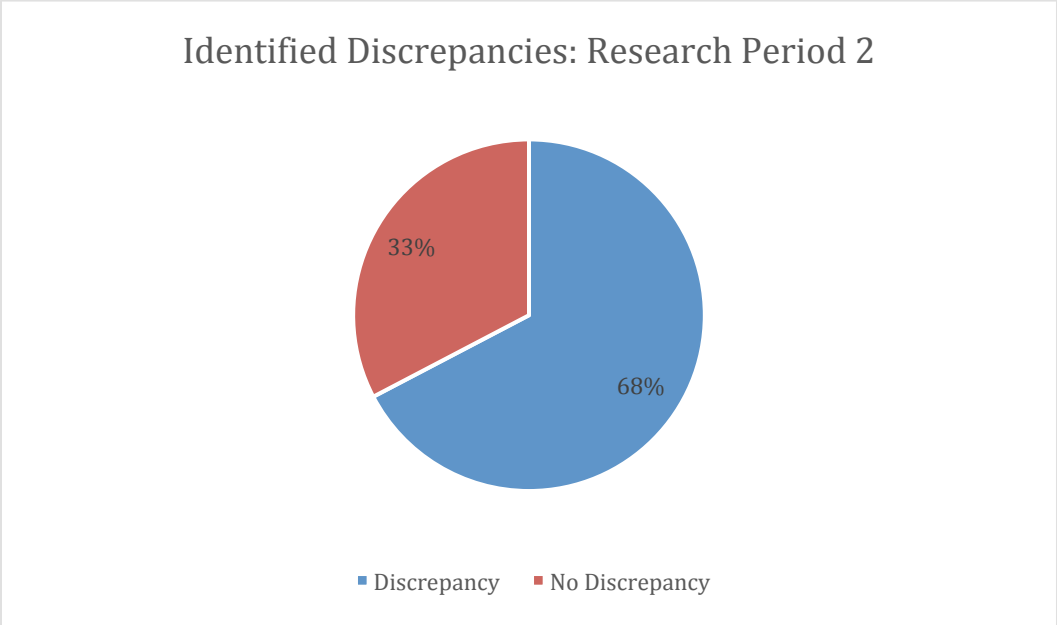

Figure 4.2. Discrepancies between AVAG and rubric score: Research Period 2

As displayed in Figure 4.2, all identified ELL students in the treatment group demonstrated growth markers. Two of the three ELL students in the control group demonstrated growth markers. Leo, an ELL student, was the only student who did not meet proficiency or above grade level in this focus skill after the first week. At the end of

the four-week period, the teacher-researcher re-administered the post-assessment to Leo and found that he had now reached proficiency according to the rubric. Multiple measures threat was not considered a factor as the test was spaced out by at least a week and students did not see the results of their previous tests, preventing them from knowing if answers they previously used were correct or not.

In the treatment groups both students who were identified as gifted academically demonstrated growth markers between their pre- and post-assessments. In the control group, all students identified as gifted academically maintained their level from the pre-assessment to the post-assessment.

Table 4.4

Research Period 2: Treatment Group

Student	**RBS**	**ROS**	**AVAG**	**Academic Designation**	**Special Category**	**Discrepancy**	**Improvement**
89	4	4	91.6	AT	GS	No	Maintained
56	3	3	92	AT	No	Yes	Maintained
23	2	4	89.3	P	GS	Yes	Yes
230	1	4	88	P	ELL/ GAS	Yes	Yes
67	1	4	84.3	P	No	Yes	Yes
110	3	4	78.6	P	No	No	Yes
90	4	4	80.6	P	GS	Yes	Maintained
170	3	4	89.3	P	ELL	No	Yes
130	1	3	81.3	P	ELL	Yes	Yes
220	1	3	69.3	AP	GAS	Yes	Yes
160	4	4	69.3	AP	No	Yes	Maintained

The students took new pre-assessments to determine the level at which students could apply past-tense irregular verbs correctly when writing additional text. Since this higher-level application fell outside the original rubric marks, the teacher-researcher reviewed the student writing samples to identify specific ways in which the students demonstrated deficiencies and proficiencies as it pertained to the application of irregular past tense verbs to their writing.

The writing samples revealed salient and surprising deficiencies among the students. One example of this was the way in which students who otherwise applied paragraph format and mechanics to their writing consistently appeared to be unable to move beyond using the individual words in a sentence, despite the fact that they had been carefully instructed to tell a story with a sequence of events and to include a topic sentence and a conclusion. This deficiency signaled that although the students could apply the words correctly to a sentence, this remained a strenuous task to the point they could not attend to an additional detail, such as paragraph format.

The teacher-researcher identified the following as new goals for the students: use additional and more advanced verbs correctly, attend to paragraph format and mechanics, tell a narrative using sequence of events, and include a topic sentence and a conclusion. The students who demonstrated the ability to apply past-tense irregular verbs correctly while attending to correct paragraph and narrative structure focused on increasing their repertoire of past-tense verbs, including more advanced verbs from higher grade levels. These students engaged in research of new verbs that they brought back to the group to share. Students focused on applying the past tense irregular verbs to their writing while still attending to paragraph format participated in a balanced literacy approach, including

interactive and guided paragraph writing that included the practice of using past-tense irregular verbs.

Table 4.5 outlines the percentage of students that increased in demonstrating their application of past-tense irregular verbs to their writing based on their pre- and post-assessment writing samples. A median was calculated to identify the percentage of students who increased in rubric level during the first week. After the shift in focus to a higher level of applying the focus skill to the task of writing, an additional median was calculated to identify how many students increased or maintained their ability to apply irregular past-tense verbs correctly to their writing.

Table 4.5

Percentage of Students that Maintained or Increased in Writing Sample

	Used all 5 verbs correctly	**Used additional/more advanced verbs**	**Attended to paragraph form/mechanics**	**Used sequence of events**	**Contained a topic sentence and conclusion**
Treatment	55%	73%	73%	100%	73%
Control	55%	55%	45%	82%	55%

It is important to note that most students in the treatment group demonstrated proficiency in using sequence of events on the pre-assessment. In both the treatment and control groups, those identified in the academically talented subset demonstrated the least room for growth overall.

Quantitative Measurement Tool 2: Likert scale emoticon quiz. The Likert scale emoticon quiz was administered once a week for the four weeks of treatments during the second research period. The researcher calculated an average of positive

responses for each question and then calculated the median among the four weeks for both the treatment and control groups. This provided an overall average of student perception and affect as the activities evolved throughout the four-week period to attend to the observed needs of the students.

Table 4.6

Likert Scale Responses

	Treatment Group % of Positive Responses by Statement	**Control Group % of Positive Responses by Statement**	**Code/Theme**
#1: The activities I did in small group today made me want to learn more.	77%	54%	Motivation/Positive Affect
#2: Working in small groups with my classmates makes me want to learn more.	67%	42%	Motivation/ Positive Affect
#3: Small groups made learning more fun for me this week.	90%	56%	Meaningful/Engagement
#4: The things I learned in small groups this week helped me learn new things.	75%	45%	Enlightenment, Meaningful/Engagement
#5: Small groups helped me notice new things I hadn't noticed before.	63%	52%	Enlightenment, Meaningful/ Engagement
#6: This week's small group activities were not too easy and not too hard, the were "just right." (Like Goldilocks)	72%	48%	Meaningful/ Engagement
#7: Compared with my friends I did well in small groups this week.	64%	60%	Self-perception/Student affect
#8: I worried about what other people thought about me during small groups.	*71%	*46%	Self-perception/Student affect
#9: I felt good about learning in small group this week.	88%	46%	Confidence/Student affect
#10: I learned by listening to others.	41%	38%	Peripheral participation/Engagement

*indicates student responded that they did not worry

As seen in Table 4.6, the results from Statement 10 in connection to peripheral participation were significantly lower for both treatment and control groups than any other categories.

Although the ELL and gifted subsets were too small to run a comparison between treatment and control groups, the results from these subsets were analyzed to provide insight and identify any possible patterns. ELL students in both treatment and control groups more often indicated a concern about the way they compared to their peers and the way others perceived them than their academically talented peers. Academically talented and gifted students in the treatment group indicated a higher level of satisfaction with the instruction presented over their peers in the control group.

Quantitative Measurement Tool 3: DCOS. The DCOS structured observation tool provided a means to record observations of the appropriateness of the lesson for both treatment and control groupings, while honoring the positionality of the researcher-within. Since treatment and control groupings were mixed, this strategy offered the option of identifying who benefitted from the levels of instruction and who did not through evidence of engagement and the different levels of learning according to a taxonomy model presented on the DCOS and prevented a bias on the part of the researcher. This approach of grouping students according to their level on the rubric directly correlated to Bloom's taxonomy and DOK. The only exception to the mixing of treatment and control students within the small groups happened when no treatment students fell in that category on the rubric. The treatment group consistently received instruction that was appropriate for their prerequisite knowledge, with 12 out of 13 sessions being perceived as appropriate for their needs.

The small group session during Week 3 of Research Period 2 was perceived as being somewhat appropriate for the needs of the identified treatment students grouped according to their place on the rubric and formative assessment. Out of 10 recorded sessions of small group time, the instruction was perceived by the teacher-researcher as being not appropriate to the needs of the control students. This finding provides insight and triangulation on the quantitative responses on the Likert scale in which 72% of students in the treatment group felt that the instruction was "just right" for them, compared to 48% of those in the control group. The reason for the instruction not aligning with the student's need was most often attributed to the student needing more help to accomplish the task or that the work was too easy for the student.

Table 4.7

Percentage of Cognitive Activity Evident by Taxonomy Level

	Treatment	**Control**
Remember	100%	100%
Understand	100%	77%
Apply	92%	54%
Analyze	58%	46%
Evaluate	50%	38%
Create	50%	31%
Engagement	100%	69%

During Week 1 of the treatment sessions, it was noted that Aliya in particular, who was placed as a Level 4, appeared to need additional support beyond what a Level 4 student should need. As a member of the control group, she was placed according to her

AVAG score, which is in the academically talented range, as opposed to her demonstrated ability on the pre-assessment, which was in the category of Level 1 on the rubric.

Table 4.7 demonstrates interesting patterns seen between the level at which each cognitive category was evident in the small groupings and how it related to treatment versus control status. As the level of cognition reaches a higher level of DOK and increases in cognitive engagement, the percentage at which it presented diminished. In the control group, Level 4 was the only grouping that consistently worked at the higher levels of cognition, such as evaluate and create. These are students that are identified as academically talented by their AVAG scores. In the treatment group, where children were placed according to their demonstrated ability in the focus skill, students demonstrated evidence of higher levels of cognitive load and DOK evenly among all levels of groupings, with the expected focus on DOK occurring at the higher group levels. Students in the treatment group who were placed according to their demonstrated ability in the focus skill presented with overall high engagement 100% of the time. Students in the control group who were placed according to their AVAG scores were found to be highly engaged (69%). High engagement was defined as approximately 80% of students in that grouping demonstrating engagement in learning during the small group session.

Qualitative measurement tools and findings. Once again, the students who raised significant questions and insight during Research Period 1 provided the focus for the quantitative portion and were continually followed into Research Period 2. The data are organized by student. Each section begins with an analysis of the itemized pre- and posttest results. Following, a combination of their interview responses and teacher

observations is provided to further triangulate the student's narrative as it continued into Research Period 2.

Amy: Treatment group. During the first pre-assessment, Amy scored a Level 1 on the rubric for correct use of irregular past-tense verbs. Her primary issues in this focus skill, as an ELL student, were orthographic in nature and incorrectly conjugating the verbs according to the grammatical rules for regular verbs. After the first set of treatments, Amy demonstrated significant growth on the interim test. The teacher-practitioner then administered the post-assessment, which demonstrated Amy now performed at a Level 4 in the rubric. This confirmed that Amy had indeed grown in this skill. In the second pre-assessment, which assessed Amy's ability to apply the verbs to her writing, she successfully and correctly spelled all five verbs in her writing. She displayed an ability to use additional irregular past-tense verbs, told the story using a sequence of events, and included a topic sentence and conclusion. She was not able to attend to paragraph format. After three more sets of treatments, two times a week, a second writing sample demonstrated that Amy forgot to use two of the five assigned verbs while attending to the writing task, but added additional and more advanced verbs. She continued to tell the story in sequence and included a topic and conclusion. Additionally, she improved in attending to paragraph form and mechanics.

During a treatment session in which the teacher-practitioner asked students to write a past-tense story composed of five sentences on index cards that the students could put in order, Amy asked if the students could do more sentences if they chose. Another student chimed in that they thought this should could earn the kids a bonus. Yet another student exclaimed, "Yes, extra credit!" This began a conversation about why we may

extend ourselves beyond the basic requirements. One student offered, “Because we want to show what we know.” The young girl who had mentioned extra credit said, “We do extra when it’s fun!” The teacher-practitioner took the opportunity to discuss how expressing an interest in doing extra is a good thing to do and something that happens when we enjoy our learning. This conversation connects to the motivation under the theme of engagement. Also this scenario represents an opportunity for interaction between the teacher and students under the code proximity, which is under the theme of benefits of differentiation.

During another treatment session when the students participated in practicing the past-tense verbs on their whiteboards, Amy noticed she had written “saw” as “sow.” She paused and thought for a moment, then self-corrected. This action demonstrates self-efficacy and confidence, which connects to the theme of self-perception.

During her post-interview in Research Period 2, Amy shared that small groups had helped her with past-tense verbs and that past tense had been something hard for her because “you always have to think how to spell.”

Cassius: Treatment group. Cassius originally was placed at a Level 1 on the rubric for the focus skill in Research Period 2. After the interim test indicated that he made significant growth following the first two treatment sessions, the teacher-researcher administered the posttest which indicated that he now performed at a Level 3 on the rubric. When the teacher-researcher assessed his writing sample for application of irregular past-tense verbs to written text, she noted that he only used one of the five assigned verbs and was not able to attend to any of the writing mechanics such as paragraph form or sequence of events.

Since writing has always been a difficult task for Cassius, the teaching-practitioner prescribed the lower level of small group so that they could focus on the writing task as well as reviewing and maintaining his knowledge of past-tense irregular verbs. The teaching practitioner used interactive writing tasks and dictations to flex this skill. The intent was that as writing became less laborious for Cassius, he would find it easier to apply the verbs to his writing. On the post-writing sample, Cassius only improved by one point in using the assigned verbs but did use additional past-tense verbs correctly. Additionally, although penmanship still presented as a struggle, he improved in all of the writing task areas with the exception of including a topic sentence and conclusion.

When assigning the original writing sample task, the teaching-practitioner assigned 10 verbs for students to apply. During this small group time, Cassius became concerned and asked, ”Do I have to write a sentence for each one?” After some reflection, the teaching-practitioner modified the requirement to five verbs. This task appeared more manageable, and Cassius said, “Oh, I can do that!” He walked away confidently stating, “I’m already on my third one!” This scenario connects to the code of proximity under the theme of benefits of differentiation as it provided the opportunity to stay in tune with the affect of the students and to respond to their specific concerns. This example also connects to confidence and self-perception under the theme of positive affect.

During his post-interview, Cassius expressed that he enjoys aspects of small group learning that include “working with friends and we have a little discussion.” This comment highlights Cassius’ preference for working on skills collaboratively and through oral activities as opposed to paper-and-pencil tasks. Attending to Cassius’ preferred

learning mode of discussion with peers connects to the code of learner preference, which is under the theme of benefits of differentiation. Additionally, it connects to the code of meaningful activity, which relates to the theme of positive engagement.

Aliya: Control group. Aliya originally placed at a Level 3 on the rubric following the pre-assessment. After she demonstrated a high level of proficiency on the interim test following the first week's treatment sessions, the teacher-researcher administered the pre-writing sample assessment. In her writing sample, she demonstrated mastery of applying all five assigned verbs to her writing task and successfully used additional verbs, used a correct sequence of events and was one of two students in the class that demonstrated using a topic and conclusion in the pre-writing sample. She did not attend to paragraph format and mechanics. Upon taking the post-writing sample, she maintained her ability to correctly apply the five assigned verbs to her writing task while attending to all of the additional components, including paragraph format. The latter represented a marker of improvement.

Elizabeth: Control group. During the second research period, Elizabeth easily demonstrated mastery of correct usage of past-tense irregular verbs and placed a Level 4 on the rubric. It is important to note the discrepancy this identifies between her proficient AVAG score, which is more a reflection of her ability to complete and turn in work. During this research period, Elizabeth's grouping was based on her AVAG scores, which was one level lower than her rubric placement. After the students switched tasks to include applying past-tense irregular verbs to writing, Elizabeth, as a member of the control group, maintained her placement in Group 3 based upon her AVAG score. Her pre-writing sample indicated that she could apply all five verbs to her writing but did not

attend to any of the writing tasks, with the exception of using a sequence of events. Her sentences were displayed as separate sentences instead of paragraph form and she did not include a topic sentence or a conclusion. In her post-writing sample, she attended to all of these tasks but forgot to include one of the assigned verbs. She did include more advanced past-tense irregular verbs correctly in her narrative, which was now displayed correct paragraph format and included a topic sentence and conclusion.

She routinely made high-level connections during small group times such as multiple-meaning words, like the word "run." The other students in the group could not engage in these types of conversation at the same level as Elizabeth, which produced some frustration on her part. This connects to the theme of negative affect. Despite this, Elizabeth continued to attempt making these connections and demonstrated high motivation, which connects to the theme of positive engagement.

By Week 2 of the treatment sessions, in which students focused on the application of the verbs to the writing task, Elizabeth still exhibited enthusiasm for a challenge. She continually blurted out answers before the others in the group and began to display signs of boredom such as fidgeting. Although the first behavior demonstrates enthusiasm and motivation, it represents maladaptive behavior specific to the learning environment, which did not produce positive results with peers. This scenario connects to the theme of negative engagement, particularly as it relates to peer relations in the classroom, and characterizes the group activities as not meaningful, which connects to the theme of negative engagement. Additionally, the behavior exhibited by Elizabeth following a lack of response from her peers demonstrates boredom, which connects to the theme of negative affect.

During her one to one post interview, Elizabeth expresses that paying attention to the teacher is sometimes hard during whole groups, but that small groups is when she does best at this skill. She states she thinks it's important to "learn new things" and likes things that "contain new knowledge." These comments highlight Elizabeth's high level of motivation, which connects under the theme of positive engagement.

Analysis of Data Based on Research Question

The qualitative and quantitative data were synthesized and organized by question in order to demonstrate how the previously presented information addresses each one.

Research Question 1

Research Question 1 asked: What are the measurable impacts, as indicated by student achievement and behavior, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction?

Growth indicators. During the first research period, which focused on students' ability to identify and use text features in informational text, group membership did not appear to have a significant impact on student achievement in the focus skill. In both the control and treatment groups, the same percentage of student demonstrated improvement markers. Additionally, the researcher began to note that the groupings based on rubric level did not appear to produce the peer dynamics necessary for peripheral participation and interaction for a skill that is mostly practiced through discussion (Haneda, 2006; Johnson, 2016).

For legitimate peripheral participation to occur, it must allow for those who are experts in the LOD and nuances of a community or culture of practice to model for those who are less skilled or new to an area (Haneda, 2006; Nagy & Townsend, 2012).

However, students such as Cassius who were placed according to AVAG scores but possessed a higher ability in the focus skill appeared to remain less engaged and challenged by their groupings. This observation demonstrates how a student whose true ability is not reflected in their grades because they have conflicting issues such as processing or executive function challenges may become disconnected with the learning process (Zimmerman, McQueen, & Guy,).

In the case of a skill such as discussing text features, it appears that group placement based on student reading level but in which various levels of abilities to discuss the text and make connections to text features provides the learning environment that is most appropriate (Johnson, 2016). However, the fact that both groups demonstrated significant increase in improvement markers in such a short time in comparison to what they entered the study with after the previous seven months of whole class and guided reading instruction indicates that the small group structure itself proved valuable in increasing student achievement in this area. The teacher-researcher attributed this result from the practice of intentionality in instruction and proximity of the teacher-practitioner (Heacox, 2018; Tomlinson, 2014). These two factors presented as the main consistencies between the two groupings.

During the second research period, which focused on a grammar skill, the treatment group produced a larger percentage of students who maintained or made improvement in the scores at 100% when compared to the students in the control group at 72%. Throughout the small group sessions, the researcher noted that it appeared students benefited the most from the repetition and practice of this skill. Although, students completed some practice as pairs of two or more, it was noted that discussion was not a

critical component of achieving proficiency in the grammar skill. The researcher began to identify that different skills warranted different approaches to small groups based upon this observation.

The intentional and focused instruction produced quick results, with all but two students performing at grade level or above by the end of the first week of treatment sessions. Both students who did not make growth were in the control group. It is important to understand that one week's treatment included participation in only two 10–15 minute sessions during the week, thus illustrating the benefits of efficiency and effectiveness. The students maintained their growth as determined by subsequent grammar quizzes that were administered as part of the curriculum. After the teacher-practitioner focused on a higher level of application, the treatment group still appeared to maintain an advantage. Although the treatment and control groups demonstrated equivalent growth in the actual application of the assigned verbs, the percentage of students who increased in the four writing skills consistently exceeded that of the control group.

Targeting DOK. The formative assessment component provided the platform for moving to a higher level of application, preventing instructional minutes from being wasted on unnecessary repetition. The ability to tailor instruction for students in a self-contained classroom in a way that is efficient is a unique quality of ongoing-formative assessment coupled with the flexible grouping procedures. In looking at the two control students who did not advance, it is important to identify certain characteristics that may lead to understanding the reasons and what may provide a discrepancy between placement based on AVAG and true ability. In the academically talented and gifted

subset, which included students who may not traditionally be recognized due to other challenges, all treatment group participants in Research Period 1 demonstrated growth in the area of DOK, despite the fact they started with a higher level to begin with. The ability to increase DOK in the academically talented and gifted subset and provide it in a way that takes into account students' true ability is an important consideration in giving this subset the opportunity to receive a challenge within the self-contained classroom.

The DCOS supported these findings by demonstrating the correlation between higher engagement and flexible differentiation based on formative assessment. Additionally, increased taxonomy level, which served as indicators of DOK, was observed more evenly among the students at all levels in the treatment group.

Identification of achievement gaps. A combined 63% and 68% of discrepancies between AVAG and students' true ability in the focus skill were identified during the first and second research periods, respectively. Such identification permits teacher-practitioners to provide intentional and targeted learning, providing a customized approach that is meaningful and engaging for students. These findings were supported through qualitative means, as the semi-structured interviews provided the students with a voice in the study to express their experiences in the small group structures. In their interviews with the teacher-researcher, many students commented on the customized approach of learning delivered through flexible differentiation. They expressed their understanding that the small groups provided them with exactly what they needed in that skill. Further, many students shared they had gained better understanding of the skills covered in the small groups.

During the second research period, Leo, an ELL student who is below grade level in reading and writing tasks, provided additional insight about the connection between flexible differentiation and identifying achievement gaps. Previously, Leo was not included in the student vignettes but demonstrated powerful insights that brought further clarity to the research questions. Throughout the school year, he demonstrated difficulty in ELA assignments. In contrast to his actual ability, he maintained an approaching-proficiency status by correcting assignments at home with his mother and receiving the base score of a 70% as credit for doing so. The ability to redo his assignments accounts for the 72.6% that he has in his ELA AVAG and does not reveal his true ability. Not only did this potentially prevent identification for special support services, such as RSP, but it also confused his parents, who felt all must be fine if his grade was satisfactory. After Week 4 of the second research period, Leo retook the post-assessment and demonstrated proficiency in irregular past tense verbs. Although Leo received the Level 2 group instruction in contrast to his true ability, his eventual growth demonstrates the influence of a spiral-type review of the skill over the course of instructional sequence. Although he needed a longer period of time to master the skill, he possessed the capability to do so when given the chance.

Research Question 2

Research Question 2 asked: What observable impact does flexible grouping, when based on the RBS, have on student affect? Are there differences in student affect based on subset (ELL and gifted/twice exceptional)?

Affect. In the Likert-style behavior affect quiz, the treatment group responded with overall higher satisfaction in all affective areas. These findings demonstrated that

the characteristics of motivation and satisfaction, as well as other affective qualities, presented as significantly impacted by a student's group membership. Students in the treatment group identified small group learning as a fun experience more often than the control group. They also agreed that the activities done in the small group made them want to learn more at a higher percentage than the students in the control group. They appeared to enjoy the peer collaboration more and identified that as a reason they wanted to learn more.

Students in the treatment group demonstrated a higher level of confidence in their Likert-scale responses, in which they indicated they felt good about their learning during small groups. Fewer students in the treatment group demonstrated concern about the way peers viewed them, again demonstrating confidence and a positive self-perception.

Engagement. Additionally, students in the treatment group identified the activities provided in small groups as meaningful more often than their control group peers by indicating a satisfaction with the appropriate level of instruction and that new things were noticed and learned during the small group sessions. The lowest outcome for both treatment and control group was found in the responses to the statement that referred to peripheral participation. Overall, students did not see this as an ongoing way of engaging in the small group learning, although some observations provided examples of such interaction. The DCOS also collaborated these findings by demonstrating that students in the treatment group were perceived by the teacher-practitioner as highly engaged 100% of the time compared to 69% of the control group students, despite the fact they were receiving identical instruction. These findings reveal that carefully

determined placement in small groups based on true ability as an important factor in students' positive engagement in the learning process.

Impact on subgroups. When analyzing the effect of flexible groupings and formative assessment on subgroups, it is important to keep in the mind the overlapping identities each student contains. In both the treatment and control group, at least one student presented with overlapping gifted and ELL identities. These overlaps present unique dimensions to that student (Becares & Priest, 2015). For example, Amy is an ELL student who has recently been redesignated as fluent English proficient (FEP). The HOPE scale also identified her as gifted, and her grades reveal academic talent. However, in talking with Amy, she did not perceive herself through this lens. During small group sessions, Amy displayed high motivation and engagement, despite her negative self-perception.

In Aliya's case, during the time when her grouping was based on formative assessment and maintained a flexible structure, she grew in confidence and increased participation, both indicating positive self-perception and positive engagement. She demonstrated the use of peripheral participation, although this theme was not relatively evident on a consistent basis throughout the study as was indicated in the observation journal. Although, the ELL subset was too small to provide comparisons, a review of their responses on the SAQ revealed that they more often indicated a concern about how others perceived them. This indication represents a major consideration when placing ELL students in small groups.

In the gifted and academically talented subgroup, the students' responses on the SAQ indicated that group membership in flexible small groupings based on formative

assessment influenced a more positive perspective on the activities and a higher level of satisfaction with the learning experience overall. For example, when Elizabeth's groupings were based on her true ability as demonstrated in the pre-assessment, she demonstrated on-going intrinsic motivation and overall markers for positive affect and engagement. However, when placed based on her AVAG, which was one level below her true ability, she demonstrated markers of negative engagement through behaviors that indicated boredom (Sharp & Clemmer, 2018).

Additionally, she found it difficult to find satisfaction in the engagement she shared with peers in this group. Others in the group did not share her enthusiasm for making observations and posing questions to the same degree as when she was placed according to her true ability as reflected by her RBS. When placed according to her true ability, she was met with a willingness from her same-level peers to engage in a conversation about the "wonderings" she shared.

Research Question 3

Research Question 3 asked: How are the needs of students who present as twice exceptional addressed using flexible groups identified by the RBS (formative assessment)?

Students who contain twice-exceptional status include students who carry two of the following subset memberships: learning disabled, gifted, ELL, or at-risk minority. These overlapping identities create unique characteristics that vary from student to student (Howard, 2010; Reis, Baum, & Burke, 2014). The following are examples of how flexible differentiation is beneficial to students when based on formative assessment and used to implement instruction for a twice-exceptional student. The following categories

were recognized as combining to provide students with positive engagement, affect experiences in learning, and increased levels of achievement.

Spiral-review. In the case of a student like Leo, who is ELL and in the process of going through an IEP to identify learning disabilities, the repetitive and intentional coverage of the skill produced results proved effective, even when he was not in the treatment group. This progress highlights the improvement that can be made when students who struggle are given the opportunity to have repeated exposure to a skill, particularly for a student who has interlocking challenges.

Proximity. Students like Cassius who present with higher levels of ability in skills such as articulation and understanding yet struggle with academic tasks that require fine motor skills require careful monitoring in order to maintain a positive learning experience. For example, the small group environment allowed for the teacher to notice when a particular task seemed overwhelming for Cassius and provide him with an "out" that maintained his dignity and built his confidence.

Elizabeth's experience as a gifted student who displays some executive functioning challenges such as organization, maintaining focus, and sequential ordering of tasks, also highlighted proximity as a benefit of differentiation. She described in her post-interview during Research Period 2 the difficulty of maintaining focus on the teacher during whole group time. She expressed that she did better at listening and maintained positive engagement within a smaller group.

Attending to modal preference. Although not a major focus of this research, the ability of small groups to provide alternative ways of learning, such as small group interaction and discussion, along with using manipulatives and interactive writing,

presented less intimidating ways of learning for some students. Cassius, in particular, flourished with the opportunity to engage in discussion with the teacher and peers in a small group setting in the treatment group. Comparatively, when interviewed following Research Period 1 when he was a member of the control group, he expressed that small groups seemed to be the same for him as whole group learning.

One student, Leonard, who visited the classroom daily from the county SDC class, displayed higher engagement only when he was able to do preferred activities. Although identified with a learning disability that requires special placement, he is exceptionally gifted and knows many subjects beyond his chronological age. While the teacher-practitioner attended to some of his preferences, the learning group structure also allowed this student to observe and engage with peers in a way that helped him to acclimate to the culture and expectations of a regular education classroom, which was one of his goals for visiting (Vygotsky, 1978). This experience provided him with the opportunity to do so in a safe and comfortable environment.

Identification of true ability. Formative assessment provided the platform to identify a student's true ability in a skill and helped to place them in the appropriate level. Although precocity, as seen in Elizabeth, often makes a teacher innately aware of a student's strengths, it is easy to see how a student's deficits can at times overshadow these strengths as discussed by Townsend (2015), Mayes et al. (2014), and Ronskley-Pavia and Townsend (2016). If a student such as Elizabeth is placed according to her perceived deficits rather than targeting true ability, a teacher-practitioner risks the student's disengagement from the learning tasks. Elizabeth's fidgeting and visible boredom when not placed with peers that matched her true ability illustrate how this can

occur (Sharp & Clemmer, 2015). In contrast, when Elizabeth is placed in a group of her high ability peers, she receives the engagement she seeks in discussing her ideas (Olthouse, 2013; White, 2013).

Research Question 4

Research Question 4 asked: How are the needs of English language learners addressed using flexible groups as identified by the RBS (formative assessment)?

Proximity. A benefit shared with other subsets, proximity appeared to produce instruction for ELLs that could appropriately redirect and prevent incorrect habits or knowledge from forming (Allen, Payne, & Brown, 2016). For example, in the ELL subset it is common for syntactical and orthographical errors to present a challenge. The scenario where Amy spelled "saw" incorrectly and self-corrected under the close watch of the teacher-practitioner is a reminder of the impact a timely and well-orchestrated redirect can produce. The teacher-practitioner still allowed Amy the space to work through it herself, while monitoring for any incorrect habits that could potentially form in her spelling. These steps maintained Amy's self-efficacy and confidence to build her positive self-perception. Following that, proximity supplied positive reinforcement, which contributed to a positive affect for Amy.

In her post interview in Research Period 2, Amy acknowledged the challenge that spelling presented for her and admitted that she had to be conscious of it. She shared that small groups had helped her to grow in this area.

Legitimate peripheral participation. Although Amy did not appear to engage in peripheral participation often, Aliya and the other ELL students demonstrated this strategy to access LOD and other skills. Aliya's gain in LOD is represented in her post-

interview comment during Research Period 1, where she shared that hearing another students use a word in the discussion helped her to learn that word too. Legitimate peripheral participation appeared to help students in other situations that presented difficulty in language, such as a student who had suffered a long-term illness that included being in a coma and subsequently had demonstrated a regression in his ability to communicate. This student began by observing mostly at the outset of our four-week treatment sessions but increased in participation as he became more comfortable with the skill and after observing peers practice it.

LOD. In Research Period 1, all ELL students in both the treatment and control groups demonstrated increase in their use of LOD according to items on the pre- and post-assessment that addressed this category, regardless of their group membership. Intentional use of the language, repetition, and practice through dialogue appear to be contributing factors. Throughout the small group sessions, both Amy and Aliya demonstrated LOD many times. After moving Aliya to a higher level so that she could benefit from other students' dialogue, she began to exhibit increasing confidence and participation demonstrating that, in her situation, such a move benefited her growth.

Summary

The data presented in this chapter highlighted the impact of a flexible, differentiated, small-group program based on formative assessment. During the first research study, the control and treatment groups produced identical results, indicating that other factors influenced the improvement. The researcher identified themes of intentional instruction and repetition as most likely influencing these results. Both of these characteristics are components of small group instruction.

The results of Research Period 2 demonstrated that in skills such as grammar, a flexible differentiation program might provide advantages for students within an elementary self-contained classroom. In affective qualities, the SAQ demonstrated that students in the treatment group consistently demonstrated positive affect when compared to their peers in the control group. These results were also analyzed to identify the perspective of the gifted and academically talented, as well as the ELL subsets. This review demonstrated that the academically talented and gifted students indicated a higher level of satisfaction with their learning in small groups than their peers in the control group. A review of ELL responses indicated that students from this subset in both categories shared a concern about how their peers perceived them and felt self-conscious.

The data from the DCOS structured observation provided a frequency analysis of how often students in the treatment and control group were identified as highly engaged. Students in the treatment group demonstrated high engagement 100% of the time. The students' level of cognitive engagement demonstrated that students in the treatment group were more often engaged in higher levels of cognitively demanding tasks than their control group peers, despite the fact they received identical instruction in the small group. As the level of cognitive demand increased, the level at which it was observed decreased but still remained consistently more evident in the treatment group students.

Qualitative data provided a narrative perspective on the journeys of four students, who represented different qualities of the focus subsets. Coded categories included proximity, spiral review, confidence, meaningful, frustration, boredom, maladaptive behavior, motivation, and modal preference, and were identified throughout the narratives and connected to larger themes such as self-perception, student affect,

engagement, and benefits. The additional categories of LOD and legitimate peripheral participation connected to the specific needs of ELL students. Through these themes, the researcher identified the circumstances in which flexible differentiation produced the best results and when positive results were possibly related to other factors. The qualitative and quantitative elements combined to provide triangulation and multiple lenses of which to confirm the findings.

Chapter 5

Reflections and Implications

The purpose of this study was to identify the relationship between the use of formative assessment to structure fluid and flexible groupings and its impact on student achievement in language arts skills. The researcher implemented an intervention of flexible differentiation grounded in ongoing formative assessment. Research questions included the following overarching question and supporting questions:

What are the measurable impacts as indicated by student achievement and observed behavior, of a standard-based formative assessment and fluid grouping approach when used in differentiated group instruction?

- What observable impact does flexible grouping, when based on the rubric baseline scores, have on student affect? Are there differences in student affect based on subset (English language learners and gifted/twice exceptional)?
- How are the needs of students who present as twice exceptional addressed using flexible groups identified by the rubric baseline scores (formative assessment)?
- How are the needs of English language learners addressed using flexible groups as identified by the rubric baseline scores (formative assessment)?

Data collected during the two research periods demonstrated a significant increase in positive affect and student engagement when formative assessment provided

placement in flexible differentiated groupings. During both research periods, the formative assessment demonstrated the ability to identify areas of strength and deficit that portrayed a discrepancy between authentic ability and AVAG (GPA). The impact of flexible differentiation on academic achievement appeared to be situational and specific to certain types of language arts skills.

In this chapter, reflections on the research produce the framework for applying the data to the self-contained elementary classroom. Additionally, areas of further investigation provide opportunities to lay the groundwork for next steps. The findings from Chapter 4 are situated in connection to the literature review of Chapter 2, and the foundation of action research as the selected research design of this study is once again revisited in order to provide a concrete foundation for the implications drawn from the study. Areas specific to the organic nature of the action research design that provide retrospective insight are explored in order to inform further investigation. The teacher-researcher continued to tackle the issues inherent within the self-contained classroom in which multiple intersectionalities of student identity traverse and call for effective and ethical use of classroom resources, including time and assessment tools. Limitations of the study, including the cross-sectional time frame and focus on only two language arts standards, present active reflection for future studies. The application of formative assessment as a tool for grouping students in a flexible model of differentiation is discussed as it pertains to meeting the intersectionalities of students within the self-contained classroom. Further steps of investigation and the transferability of the study provide additional application of the study to the educational setting. The findings of the study and how they support the goals of action research present further dialogic validity.

The reflexive nature of action research provided the opportunity for the teacher-researcher to seek applications for the self-contained classroom setting. Throughout the process of data review, the researcher noted a blend of insights. Although key issues of accessibility, as it pertains to diversity, are often seen in light of the cultural lens, the researcher found the category of accessibility to include the broader spectrum of intersectionalities of diverse learning abilities. A multi-layer perspective of culture within the educational setting provided a lens that allowed the teacher-researcher to gain understanding of how intersectional identities overlapped in the self-contained classroom.

Key Findings

As the data was reviewed, the teacher-researcher categorized it in connection to the constructs introduced in the theoretical framework. The different categories of theory, in which differentiation and its key benefits intersected, provided consolidation of findings as they relate to the theoretical framework. Additionally, while cultural diversity is a key component of this research and is touched upon in this section, it is further unpacked in the section on issues of equity later in this chapter. The key findings are divided into three main categories: impact on key areas of interest in the classroom, impact of key components of flexible differentiation, and impact on diverse subsets in the classroom. This latter section focuses mainly on the impact of flexible differentiation on students in relation to their academic ability. Inherently, academic ability overlaps with cultural influences and issues of linguistic diversity. However, the cultural connection is further discussed later in this section.

Impact of Flexible Differentiation on Key Areas of Interest in the Classroom

The researcher identified three potential key areas of impact achieved through flexible differentiation in a self-contained classroom: academic achievement, student engagement, and affective domain. Academic achievement refers to a student's ability to demonstrate proficiency or mastery of academic state standards. Student engagement, while connected to the affective domain, required a separate category as the research developed. Engagement refers to the rate at which a student remains actively on-task and is observed participating in classroom activities. The affective domain category covers the perspective and lens through which the student views their learning.

Academic achievement. While recent concerns have been raised about the ability of differentiation to address academic achievement, particularly in lower-socioeconomic demographics, consistent themes of positive impact on academic achievement were uncovered during the data collection and analysis. Narrative inquiry methods throughout the researcher's data collection provided insight into the nuances of differentiation and its ability to produce academic growth in diverse subsets within the classroom (Johnson, 2016). Students who presented with intersecting subsets such as ELL and giftedness demonstrated that flexible differentiation and the benefits of learning that targeted their needs experienced growth in areas specific to their subset, such as syntactical and grammatical nuances. Additionally, flexible differentiation prevented a focus on student deficits by allowing flexible placement that acknowledged areas of strength. This, in turn, may contribute to further growth academically by allowing these students with intersecting identities to achieve their potential and not be defined by their limitations (Reis-Baum & Burke, 2014; Ronskley-Pavia & Townend, 2017).

In comparing the data between Research Period 1 and Research Period 2, it was noted that the academic growth in the targeted focus skill of using informational text features was completely identical between the treatment and control groups. This observation lends itself to the possibility that the impact of flexible differentiation based on formative assessment may be skill specific and that heterogeneous groups of students in areas that require dialogue, such as discussing informational text, may benefit students.

Student engagement. Students grouped according to their authentic ability as indicated by the rubric appeared to demonstrate a higher level of student engagement overall as opposed to students placed according to their AVAG (GPA), as supported by the findings of Manship et al. (2016). This remained true among various subsets of students and was consistently triangulated through student-generated data and observed behavior. For example, in the subset of gifted students, Elizabeth demonstrated frustration and boredom when placed according to her proficient ELA GPA, which was mostly influenced by her disorganization and difficulty in turning in assignments. According to her rubric score, her placement would have been in the above grade-level group. When not placed with the gifted subset, she became frustrated that others in the proficient group did not grasp her abstract thinking. Although, she started out with enthusiasm, this diminished over time and gave way to maladaptive behavior as a result of not being able to engage with others in the group. Elizabeth's example demonstrates what may happen when students are categorized by their deficits and not their strengths, particularly when their deficits are not directly connected to their ability in a skill (Reis, Baum, & Burke, 2014; Ronskley-Pavia & Townsend, 2017).

Additionally, grouping based on demonstrated ability in an identified focus skill produced overall higher levels of cognitive engagement. In contrast, the only students in the control group who were able to operate at higher levels of cognition and engage in tasks of evaluation and creation were those identified as academically talented. This data demonstrates how traditional measures of grouping may further marginalize other academic subsets and prevent them from further accessing the curriculum to their potential (Bloom, 1956; Hattie, 2009).

The concept of DOK as a manifestation of engaging in tasks at deeper levels is grounded in Webb's extension to Bloom's (1956) previous categories. This extension supports the alignment between the way skills are assessed and the depth at which students should know material (Hess, Jones, Carlock, & Walkup, 2009). The data from this study point to the important interlacing of DOK and student engagement. The overlapping of these two constructs and how flexible differentiation promotes DOK equity for students of all academic subsets has clear applications for the way instruction is organized and presented in the self-contained classroom.

Small groups overall afforded students the option to participate in ways that brought out their true ability, which may be masked by fine motor skill difficulties such as penmanship. Small group structure generally allowed these students the opportunity to demonstrate their strengths in areas that may otherwise be held back by difficulties in fine motor skills or reading. The chance to shine in areas of strength promoted positive engagement characteristics such as higher levels of participation and on-task behavior, which replaced previously noted avoidance behaviors in these students. This observation acknowledges that there are intrinsic characteristics of small group learning that are

beneficial to students. However, when the positive effect of flexible differentiation on DOK equity is taken into account, the possible benefits specific to that intervention can be noted.

Affective domain. Although concerns have been raised that attending to affective issues in the classroom detract from academic achievement, the data in this research study demonstrates the way these two areas intersect and create a symbiotic relationship (Booker, 2008). In fact, although the affective component in this study began as a supporting role to the academic category, affective characteristics appeared to be one of the most powerful factors of flexible differentiation's positive impact on student success in the self-contained classroom. The most significant impact was seen through treatment group students' increased positive responses in the areas of affect, as well as their higher rates of DOK when placed in groups according to the flexible differentiation model.

Efficiency in the classroom. Throughout the data collection process, the efficient way in which flexible differentiation addresses the extensive diversity encompassed within a self-contained elementary classroom revealed yet another benefit of differentiation. The components of a classroom culture and a community of practice supported student self-efficacy within the classroom setting in order to provide the opportunity for the teaching practitioner to meet with a small group of students while the remaining students in the classroom continued to be appropriately engaged in learning related activities (Lave & Wegner, 1991; Vygotsky, 1978). Classroom culture also provided the framework for the structures and procedures that led to student independence and the overall success to the logistical functionality of flexible differentiation (Lave & Wegner, 1991; Vygotsky, 1978).

Flexible differentiation was identified by the teacher-researcher as addressing a broader range of ability in a specific skill-set while keeping within the time constraints of a self-contained classroom (Heacox, 2018; Jones, 2015). This allowance is in stark contrast to the unsustainable demands of individual instruction (Baker, Young, & Martin, 1990). Additionally, the formative assessment component contributed greatly to the teacher-researcher's ability to identify which skills needed to be reviewed as a whole-group, direct-instruction lesson versus skills that demonstrated a diverse range of ability levels, thus calling for small group learning structures.

The atomic way in which skills were addressed in the formative assessment rubric allowed for the teacher-researcher to easily address each group level's needs in a way that connected to the DOK continuum and provided the framework for identifying missing prerequisite skills. This atomistic paradigm prevented students from accumulating gaps in their learning and provided a path for scaffolding areas of missing skills, instead of ignoring these needs or assuming skills are in place simply because a student passed from one grade level to the next (Popham, 2017; Schiro, 2013; Tyler, 2017). The teacher-researcher also identified that the processes by which the teacher organizes the differentiation may be modified to meet a wide array of needs, including skill sets, teacher preference, and the composition of the class.

Diversity in the classroom. The social justice nature of flexible differentiation within the self-contained classroom, as viewed through the Deweyan lens, presented in the identified discrepancies between AVAG scores and demonstrated ability as weighed through the rubric (Dewey, 2017; Fallace & Fontozzi, 2017). These differences presented in both research periods, regardless of the within-subjects crossover and focus skill. The

discrepancy between AVAG and true ability stemmed from many different reasons, including students option to redo failed assignments for a better grade, executive functioning difficulties, or psychomotor skills that prevented students from fully participating in written assignments. These factors had the potential for over-inflating or under-estimating a student's ability in the AVAG score. Such inaccuracy can mislead parents and educators or even prevent a student from being identified for gifted services or remedial support. The objective lens provided by the rubric transcended and tempered potential deficit model impact that focuses on a student's perceived or true weaknesses, paving a way for true curriculum accessibility and equity for all intersectionalities (Harry & Klingner, 2007; Howard, 2010).

Impact of Key Components Provided by Flexible Differentiation in the Classroom

The teacher-researcher identified three important elements of the flexible differentiation model used in this research that appeared to provide significant impact on students' learning: formative and ongoing assessment, teacher as practitioner, and student to teacher ratio. These benefits appeared to outweigh the concerns of the flexible differentiation structure, such as classroom management challenges. Potential concerns were addressed in this research through classroom culture as defined by procedures designed by the teaching-practitioner to regulate the functionality of the classroom and the efficacy of the learners therein (Lave & Wegner, 1991). These factors are blended with the objectivity of the rubric system to provide students with targeted instruction.

Formative and on-going assessment. Continual assessment that is grounded in authentic measures, such as observation of a student performing or applying a skill, provide the opportunity to avoid testing biases that may be present in traditional tests.

Everyday classroom activities, such as the must-do assignments the teacher-researcher implemented in the study, encourage authentic measures that guide instruction appropriately (Jones, 2015; Lam, 1995; Pham, 2013). This benefit presented itself during Research Period 1 when Cassius demonstrated his ability to discuss and analyze informational text in the one-to-one assessment, which he previously had not been able to do through his writing. Although this style of assessment initially required additional time, the long-term benefits of having direct insight into children's ability to discuss and use features from the text allowed the teacher to address and isolate this skill, regardless of their penmanship, orthographic ability, or writing deficits. This assessment measure ensured that appropriate interventions and instruction became the focus of classroom time, rather than the student's deficits, by allowing the flexible placement of a student.

Cassius's example provides a vignette of a student who may be struggling academically but displays strengths and even giftedness (Duenk et al., 2018; Harry & Klingner, 2007; Mayes, Hines, & Harris, 2014; Pham, 2012). Flexible differentiation grounded in formative and on-going authentic assessment places an emphasis on education as a holistic process and situates students, such as Cassius, as the center of instructional decisions (Dewey, 2017; Schiro, 2013). Through the use of academically responsible materials grounded in on-going assessment, teacher-practitioners hone students' strengths and attend to their weaknesses grounded in set criteria and observable results (Gagne, Briggs, & Wagner, 1992; Popham, 2017; Schiro, 2013).

Teacher as practitioner. The teacher's ability to maintain professional application of her knowledge about students and the standards they must acquire permits the teacher the discrepancy to test students in ways that take into account cultural norms

of the students she serves. When synthesized with the objectivity of the rubric system, the insight of a teaching practitioner, as he makes instructional decisions throughout the day, can prevent testing bias (Fitch, 2015; Heacox, 2018; Tomlinson, Moon, Imbeau, 2015). The continuous process of identifying learning needs and implementing instructional prescriptions prevents the ineffectiveness of institutional assessment processes when not tempered with teacher insight (McLesky & Waldron, 2000; Tomlinson, Moon, & Imbeau, 2014). An example of this is prominently displayed during Research Period 2 in which the teacher-researcher recognized that all but one student had mastered the focus skill of irregular past-tense verbs. An important decision was faced: continue on with the predeveloped plan or implement the true nature of flexible differentiation and shift direction. This decision created an inner-conflict for the teacher-researcher, demonstrating that friction and uncertainty is often part of an evolving instructional plan. The process of decision making represented a critical juncture that required the teacher to move forward based upon the given circumstances of student needs. Such organic development of instructional sequence is one that does not align with rigid testing schedules or inflexible curriculum sequences (Heacox, 2018; Lawrence-Brown, 2004; McLaughlin, 2017). Additionally, one-size-meets-all testing structures may interfere with identifying true student needs due to testing or cultural bias (Howard, 2010).

Further, a practitioner's lens allowed for the teacher to tailor instructional plans for individual students without being dictated by the AVAG score. In Cassius' example, a complex array of factors was considered, including his struggle with penmanship skills. These considerations called for alternative methods of instruction, such as interactive writing tasks, which proved to be less burdensome and lightened his cognitive load. This

strategy allowed him to focus on the actual skill of paragraph format. The post-writing sample demonstrated the positive outcome for Cassius, as he improved in all writing task areas, with the exception of topic sentences and conclusions.

Student-to-teacher ratio. In both treatment and control categories, the small-group setting provided the opportunity for increased engagement between students, their peers, and the teacher-practitioner (Berkowitz et al., 2017; Manship, et al., 2016). Several students expressed through the survey and interviews that they found it easier to pay attention or remain engaged during small groups as opposed to whole group instruction (Kapucu, 2012; Wegner, 2010).

Heightened engagement between the teacher and the students led to an increased level of observation on the part of the teacher-practitioner. An example of this can be seen when Cassius expressed subtle doubts about the number of sentences required in the assignment on past-tense irregular verbs. The teacher-researcher noted his uncertainty and connected this observation to her knowledge of Cassius and his difficulty with paper/pencil tasks. A more appropriate assignment was provided immediately, which in his case meant fewer sentences. This allowed Cassius to still demonstrate his level of ability without becoming overwhelmed by the task itself and prevented his deficits from becoming the focus (Jones, 2015). He left the small group table with an increased confidence in his ability to manage the task at hand, preventing him from exclusion from learning the skill (McLesky-Waldron, 2000).

In this scenario, the teacher-practitioner took on the role of facilitator and provided scaffolding that addressed extenuating factors, such as fine motor skills, that would otherwise impact Cassius' compliance with the task (Brown, Collins, & Daguid,

1989; Kapucu, 2012). Allowing the student to communicate their apprehensions about an assignment, as allowed for in a small-group setting, permits the teacher-practitioner to provide academically responsive materials and equity in access to the curriculum (Tomlinson, 2014). The opportunity to build Cassius' confidence places another stepping stone in the right direction. In the end, this stepping stone allowed a shift in the right direction that appeared to contribute to his improvement in all but two areas of the writing task.

Reflections on Action Research

The action research methodology used in this study provided the framework for a researcher-within to collect data that contributed to new insights and opportunities to safely pilot strategies appropriate for the local setting (Efron & Ravid, 2013; Herr & Anderson, 2015). The unique qualities of action research supported the study's goal to determine the impact of flexible differentiation in an authentic student population.

Connections to Quality Indicators and Action Research Goals

Action research goals aligned with the purpose of the research in this study, allowing the researcher to formalize differentiation processes and procedures in order to identify their impact on student achievement and affect (Janssen et al., 2015). Prior to the data collection period, the teacher-researcher developed these methods of differentiation over the course of 20 years within elementary education and desired to isolate the components that produced the most impact on student achievement without undermining the organic nature of acting as a teacher-practitioner in the classroom. Action research supported the synthesis of theoretical underpinnings and the implementation of a

practical classroom application in which the attributes most impactful could be readily identified (Janssen et al., 2015; Mertler, 2017).

Further, action research provided the appropriate pillar upon which to build a research design that explored issues of equity and relevance to a local setting (Creamer, 2018; Creswell, 2013; Mertler, 2017). To the purpose of understanding the impact of an intervention, such as flexible differentiation grounded in formative assessment, on subsets within the classroom, action research supported the action-oriented nature of such a pursuit. The ability to watch the action of differentiation unfold organically within the classroom setting from a researcher-within perspective granted a unique lens to the process, without which the insight would not produce the same level of meaning (Creswell, 2013). Although not the only way to study differentiation processes within the elementary classroom, this methodology provided salient themes that may contribute to on-going dialogue and garner further investigation (Efron & Ravid, 2013; Herr & Anderson, 2015).

Reflections on the Research Design

The mixed methodology of the study presented a holistic vehicle by which to triangulate quantitative outcomes with rich descriptive findings that also gave priority to students' perspective (Creswell, 2013). While quantitative data gave numerical indicators and "patterns of evidence" (Varla, 2013) about student achievement and affective qualities, the descriptive data provided potential explanations for the results. It is within these explanations that critical conclusions can be drawn and further explored, followed by comparison of new findings.

Action research allowed for the development of data collection measures as the study evolved and demonstrated the power of hindsight and the importance of growing in practice as teacher-practitioners. The additional instruments used to collect data during the second research period provided such significant insight, their absence during the first research period proved to be regrettable. However, their development is a natural product of the action research process and demonstrates knowledge is produced as the study progresses. This element of action research highlights and aligns with the fundamental truth of teaching as an activity always in process. Moving forward, the researcher plans to utilize the range of both qualitative and quantitative measures from the beginning and to use these ideas as a springboard for designing further research.

As a result of the development during Research Period 2, in which all except one student mastered the focus skill, the researcher developed official interim checkpoints in the research timeline, building in the opportunity for the organic nature of flexible differentiation to be a part of the process from the beginning. Prior to this research cycle, the identification of such overall quick mastery had not occurred. This occurrence presented a new challenge for the researcher and extended the reach for the teaching-practitioner to make decisions based on shifting data.

Impact On Diverse Subsets Within The Classroom

The intricacies of addressing the multiple intersections of diversity within the self-contained classroom present an overwhelming challenge for many educators. Issues of both academic and linguistic diversity presented as the focus of the research conducted in this study. The teacher-researcher pinpointed the academic achievement of students

from these various studies in relation to the intervention of flexible differentiation, as well as affective characteristics and how they connect to academic success.

Academically talented and gifted. Students who achieve overall high grades or who display above-average abilities in any area present specific challenges for the self-contained classroom and may encounter complications that produce at-risk effects. The assumption that this subset will, in essence, teach itself can contribute to a crippling and self-defeating marginalization of one of our greatest resources. Although the self-contained classroom is organized by chronological age, instruction that is designed for the needs of the academically talented or gifted student who is performing above grade level is important to engaging these students in the classroom (Tomlinson, 2014; Tomlinson, Moon, & Imbeau, 2015). Of the 28% of students in the treatment group and the 52% of students in the control group that expressed instruction did not meet their needs, many pointed to the task being too easy as a reason for this feeling. Flexible differentiation prevents uniform tasks from disengaging higher-level students and attends to their zone of proximal development (Davis, 2010; Martin & Pickett, 2013; Tomlinson, 2014; Vygotsky, 1978).

Likewise, it is important to identify students whose giftedness is masked by a learning disability or other challenge (Reis, Baum, & Burke, 2014). Students such as Cassius, whose work does not represent the stereotypical gifted student, still require a challenge in their areas of strength in order to maintain their engagement in classroom culture. In Cassius' example, allowing him to utilize his strengths to practice the skill of identifying and applying text features may have contributed to his growth during Research Period 1, despite his membership in the control group. Once again, the overall

strengths of small group instruction and what they offer to students, such as lower teacher-to-student ratios such that students cannot hide in a large group setting, are evident.

During the second research period, the students' writing samples provided glimpses of specific skills that even academically talented and gifted students displayed deficiencies (Lawrence-Brown, 2004; Sharp & Clemmer, 2015). The rubric provided a designated markers by which to identify a student's level of mastery in the focus skill and provided a more objective glimpse into the student's ability to apply the grammar skill at a higher DOK without hiding behind their academic strengths such as higher levels of vocabulary, neat penmanship, or mastery of writing mechanics. This consideration is important to meet the true needs of academically talented or gifted students and prevent the unintentional gaps in skills when we assume that the higher achieving students naturally reach mastery in all skills (Lawrence-Brown, 2004; Sharp & Clemmer, 2015; Tomlinson, 2014; White, 2013).

Although students in the academically talented and gifted subset largely accessed curriculum at a higher level of DOK, regardless of group membership, students in the treatment group expressed an overall higher level of satisfaction with the activities and instruction, rather than feelings of boredom. The treatment group in this subset accessed material that was "differentiated up" (White, 2013, p.17) and received adequate attention and specialized instruction from the teacher-practitioner (Olthouse, 2013). Although students were not overtly aware of how groups were formed, students appeared to recognize that their group placement provided them with what they needed. A competitive attitude overall did not appear to be an issue and since the composition of the

treatment group changed periodically as students' needs changed, students did not appear to feel one group placement was better than another.

Academically challenged/learning disabled. Flexible differentiation grounded in formative assessment demonstrated the ability to address the needs of students who struggled academically, while still leaving room to identify their strengths (Davis, 2010; Moon & Reis, 2004). Cassius is a student who struggled in his academic tasks. Although he fell into the twice-exceptional category, his deficits in fine motor skills and reading often prevented him from fully accessing the curriculum or demonstrating his knowledge. During Research Period 1, in which Cassius was grouped according to his AVAG, he did not benefit from holding conversations with other students in this level, as his ability to identify features of the informational text and apply them to making inferences and connections, superseded those of the approaching proficiency category in which he was placed.

This example is a powerful reminder that students who fall into the academically challenged or learning disabled category may have overlapping strengths that are easily ignored in favor of addressing weaknesses (Tomlinson, 2014). The second research period appeared to provide more inclusivity for Cassius according to his prescribed needs based on his ongoing formative assessment and rubric scores, aligning with the zone of proximal development (Fitch, 2003; Fuchs, Fuchs, & Vaugh, 2015; Vygotsky, 1978).

Additionally, the teacher-researcher established the qualities of small group learning that provided the most potent support to students in this subset. During Research Period 2, Leo remained below proficient in the grammar skill long after the other students. This challenge is not unusual in the self-contained classroom and requires an efficient use

of classroom time to address individual needs without detracting from the instruction of the other students. Although Leo was placed in the control group during this time and was placed according to a slightly inflated AVAG score, small-group characteristics provided the repetition and proximity he needed. Eventually, he reached proficiency three weeks after the other students. His success is a reminder that each student travels their own path of learning and that determination on the part of a teacher-practitioner can assist these students in reaching proficiency.

Grade-level student. Although not discussed at length, data collected during this research study demonstrated the impact flexible differentiation has on grade-level students. The process of flexible differentiation allowed students who were meeting grade-level expectations to have their needs identified and addressed (McClusky & Waldron, 2000; Tomlinson, 2014). In some cases, this meant bridging the student to the next DOK level on the skill. An example of this is seen in the way the teacher-researcher extended the plan during Research Period 2 in order to provide the students with the application level of DOK after students quickly gained proficiency in the focus skill. The advantages of flexible differentiation appeared to be situational, depending on the skill. During the first research period, students of both group memberships appeared to gain benefits from the key components of small group structures such as small student-to-teacher ratio, spiral review, and repetition of skill. In the case of a procedural skill, such as using past-tense irregular verbs during the second research period, students in the intervention group appeared to demonstrate an advantage. These insights give further guidance on factors for teacher-practitioners to consider when making instructional decisions in the self-contained classroom.

Twice-exceptional student. A student who is designated as multiple categories may be at-risk for the deficit model, in which teachers focus on a student's deficits rather than his strengths (Reis, Baum, & Burke, 2014; Ronksley -Pavia & Townsend, 2017). While previous research mainly focuses on the deficit model as it pertains to those of different socio-economic and racial backgrounds, the teacher-researcher expanded this concept to include areas of academic diversity as well. Of particular interest, students that presented with more than one identification displayed unique characteristics that allowed the teacher-researcher to unpack the experiences of the twice-exceptional student in the self-contained classroom.

Elizabeth's vignette provided an opportunity to view the ways in which a gifted student with executive functioning challenges may be at-risk in the self-contained classroom. When given the opportunity to demonstrate her ability in a specific focus skill, the teacher-researcher isolated Elizabeth's true ability without the interference of extraneous noise, such as her inability to complete work in a timely manner and maintain organization. It is interesting to note how these challenges impact Elizabeth's AVAG grade and that her GPA might actually prevent her from being considered for gifted and talented screening through the district. Although it is important for Elizabeth's teacher to continue to work with her on improving her school skills, basing her instructional goals on behavioral issues such as organization does not address her true ability. Yet, that is exactly what is done if Elizabeth's instructional path is decided by her overall grades.

It is at this juncture where the connection between the affective qualities and flexible differentiation's ability to support students in the area of positive engagement becomes a critical component in academic success. While students of other categories

may demonstrate academic benefits from small-group structures in general, the twice-exceptional student's case is complex and thrives with the fluid nature of flexible differentiation. When Elizabeth's group placement was based in her overall achievement, she displayed negative affective characteristics such as boredom and frustration with her peers. Although her AVAG might be lower than others in the above grade-level group, she found it be much better suited for her intellectual needs. This brings a practical awareness of these overlapping characteristics to the self-contained classroom and provides reflections for the teacher-practitioner.

Linguistic diversity. The setting of the study afforded the opportunity to observe the impact of flexible differentiation on a broad spectrum of language learners, including those whose first language was Arabic, Spanish, Mandarin, or Filipino. Unspoken nuances in language and curriculum grounded in the normative may prevent students of varied cultural backgrounds and linguistic diversity from accessing the curriculum in a way that supports their language growth (Harry & Klingner, 2007; Howard, 2010). Additionally, students like Aliya, who maintain high AVAG scores, may have needs specific to her ELL designation overlooked without the on-going assessment that is provided through flexible differentiation. If the student is solely grouped based on one of her group identities, whether it be ELL status or AVAG, opportunities to identify the specific needs of that student may be missed.

During the second research period, Aliya's vignette provides a look into such a situation. Despite her overall high academic achievement, Aliya demonstrated in the beginning that she needed additional support in the area of irregular past tense verbs, a common challenge for second language learners. By looking at ongoing formative

assessment results and identifying student needs in specific areas, students who have these overlapping identities, such as academically talented and ELL, are less likely to have challenges overlooked. Likewise, a teacher-practitioner may avoid preconceived expectations or the deficit model from dictating a student's learning path (Becares & Priest, 2015).

The atomic perspective provided through flexible differentiation based on formative assessment led to authentic instruction of students rather than focusing on their overarching labels, which can often focus on perceived needs rather than true needs (Harry & Klingner, 2007). Such a process during the foundational elementary years of education brings the potential to avoid assuming a child's need lies in his deficit or through a biased lens, preemptively addressing the issues surrounding access to advanced course placement in secondary school (Deunk et al., 2018; Harry & Klingner, 2007; Howard, 2010).

LOD. Research provided in Chapter 2 demonstrated the challenges of academic language for ELL students and the importance of this content-specific language to a student's ability to access the curriculum (Ernst & Mason, 2011; Nagy & Townsend, 2012; Schlepegrell, 2012). Attributes of small group learning appeared to contribute to an increase in LOD and DOK as ELL subset members of both treatment and control groups demonstrated improvement in their academic language. Proximity to teacher and low student-to-teacher ratio appeared to be the contributing factors for this, along with increased interaction with peers. Therefore the teacher-researcher concluded that, while flexible differentiation and formative assessment practices provided instrumental

components for academic success of ELL students as noted previously, small-group structures themselves provided the environment for ELL growth in both LOD and DOK.

Aliya often displayed the use of legitimate peripheral participation afforded by small group learning, which may have contributed to her academic language growth as understood through the teacher-researcher's observations (Haneda, 2006; Nagy & Townsend, 2012). Although Aliya displayed overall strength in her academics, her behavior allowed a glimpse into the importance of considering the multiple overlapping cultural identities that influenced her, including the way in which her home culture, language ability, and perception of herself in relation to the world around her (Heacox, 2018; Howard, 2010). The small-group environment afforded Aliya the opportunity to participate at her comfort level, experience trial and error with the academic language with less risk, and engage in legitimate peripheral participation in a way that was meaningful and contextual (Brown, Collins, & Daguid, 1989; Haneda, 2006; Price, 2003; Toohey & Day, 1999). By allowing Aliya to participate at her comfort level, the teacher-researcher sought to respect the identities she brings to the classroom, rather than alienating Aliya from the learning process (Valenzuela, 2017).

Affective qualities and the ELL student. The results of the Likert-scale assessment on student perception demonstrated that all ELL students in both the treatment and control groups expressed concern about the way their peers viewed them and that they were very interested in the way they compared to their peers. This insight connects to the importance of providing students with a place in which they feel secure and how small group learning provides this benefit (Price, 2003; Toohey & Day, 1999). For example, Amy, an ELL student also twice-identified as gifted, expressed a low self-

confidence level but relayed a positive perception of her learning experiences in small groups. The teacher-researcher observed her moments of quiet introspection and other anecdotal insights that helped the teacher-researcher move forward as a practitioner to meet Amy's specific needs. The safety net and access to observation provided through small teacher to student ratio and teacher proximity appeared to be factors in this occurrence.

Although these factors are present in both treatment and control groups, the teacher-researcher came to understand the interwoven nature of the benefits specific to small-group learning in general and the way it supports academic achievement through flexible differentiation. Through the development of this understanding, it became clear that all these factors together provided the precise environment for learning to occur.

Aliya's example offered a clear connection between the affective qualities supported through small-group features and the academic achievement promoted through the ability of flexible differentiation to fluidly move her based on observed needs and appeared to procure positive affective outcomes for her. She appeared to connect more to her potential as she found the opportunity to engage and observe students performing at a higher DOK, eventually leading to increased participation and confidence in the discussion. These examples present the importance of fluidity, something only available in the flexible model of differentiation, to support the teacher in addressing the intersectional overlaps in students' identities and provides equity in access to curriculum (Becares & Priest, 2015).

Limitations of the Study

Limitations of this study include ideas that may have shifted due to the uncovering of new knowledge or insight as a result of the research process and which may influence the outcome. These limitations are an integral component to research and therefore do not detract from the findings. Additionally, the research is limited to a particular cross-sectional timeframe and subject.

Interim discoveries: The evolutionary nature of research. Throughout the research process, interim discoveries were unearthed by the teacher-researcher that influenced the trajectory of the study. These discoveries often unveiled initial weaknesses in the teacher-researcher's plan. The teacher-researcher determined these ongoing findings presented the natural and organic path of authentically grounded action research and provided the opportunity for the reflexive nature of teaching. Shifting insights were therefore included as part of the discussion, often necessitating revisions and agentic cuts and additions to the research plan.

These changes initially proved to be challenging to the straightforward nature of the teacher-researcher but ultimately became an inextricable component to understanding the formative and ongoing nature of flexible differentiation itself. For this reason, the shifts made within the research were deemed to contribute rather than detract from the value of the research, as they supported the purposes of action research in generating knowledge valuable to the setting in which the research was situated. An example of this can be seen during the first research period, in which the teacher-researcher began to recognize that the type of differentiated grouping, whether homogeneous or heterogeneous in skill level, may be situational. Additionally, when both the control and

treatment groups achieved the same amount of growth during the first research period, the researcher determined that it may be elements of small grouping itself, such as proximity of the teacher, that are the most influential.

During the second research period, the data indicated after the first week that the majority of students had reached proficiency in the standard. This necessitated an unplanned change in the research, which initially caused the teacher-researcher uncertainty. The concern rested in whether or not making a shift in the focus skill would undermine the integrity of the research itself. Ultimately, after consulting with professors and reflecting upon action research methodology, it became clear that such a change further illustrated the path of true flexible differentiation within the classroom, rather than detracting from it.

Unintended influences. Certain factors surrounding the setting fell outside the control of the researcher, such as the cross-sectional timeframe of the research and delimiting to two focus skills in ELA. After consideration, the teacher-researcher determined these factors strengthened the research at hand by narrowing the focus of the study. Further steps are required in order to determine how flexible differentiation unfolds over longer periods of time, as well as to determine the reach and applicability of flexible differentiation to other focus skills and areas of study. These issues are further addressed in the implementation plan section of this chapter.

Implications for Practice

At the onset of the study, the teacher-researcher placed a high emphasis on academic achievement within the flexible differentiation process. Throughout the study, this perspective changed as anecdotal and numerical data indicated the strong impact on

students' affective characteristics and attitudes toward learning and the strong link between positive affect and academic achievement. Therefore, it became apparent that the impact of flexible differentiation and the use of formative assessment to compose the small groups on students' affective qualities are inseparable. While the way students are grouped according to their specific needs has an impact on affective characteristics, it appears positive affect may play one of the most significant roles in students' academic growth, as seen through engagement levels.

Additionally, flexible grouping appeared to have the most impact when the intent of the small group was to teach a straight-forward skill, such as grammar basics. When the skills required discussion, such as reading informational text, grouping did not have a significant impact on the academic growth of students. This insight brought to the teacher-researcher's attention that the characteristics of small group learning, such as proximity to the teacher, held the greatest impact.

The aforementioned insights initiated a change in the teacher-researcher's perspective, as she began to see flexible differentiation not so much as a systematic procedure but rather a process. Instead of defining a procedure, the research provided a path to understanding the key components of student learning within the differentiation process and how these components can be woven together prescriptively on a case-by-case basis. In other words, a shift in perspective occurred throughout the research process that affects the way in which small group time is implemented in the setting, with a significant emphasis now being placed on process over procedures. A hesitation that came from trying to master the procedure of flexible differentiation lifted and allowed the

teacher-researcher to work through the process of the method in a way that honors the adaptable nature at the core of differentiation.

Implementation Plan

Based upon the findings from the research contained in this study, further replications are needed to verify the findings and identify how they unfold over longitudinal timeframes and when used to address other subjects and standards. Additionally, the potential of ongoing formative assessment within the self-contained classroom to inform intervention services provided outside of normal classroom hours should be explored. The following section outlines a framework for continuing this investigation and contributing to the conversation on flexible differentiation's impact on the diversity encountered within the self-contained classroom. A revision of the research goal is provided based on the findings from this study as well as an overview of the study's design moving forward.

Clarification of the Problem of Practice

True to the original purpose of this research, the teacher-researcher determined the focus to rest upon the interlacing of cognitive and affective influences as determined by flexible differentiation. Issues relating to affective characteristics appear to be specific to subset membership within the self-contained classroom. Further affective characteristics, as influenced by small-group placement, appear to have an impact on academic achievement. As the teacher-researcher began to develop an understanding of the interwoven nature of these elements, the need for further clarification of these observations revealed itself.

Basis for Further Research

As the research unfolded, particularly during Research Period 2, the inherent organic nature of differentiation in its purest form revealed itself as students met proficiency and mastery much faster than anticipated by the teacher-researcher. Although this was cause for concern at first, eventually the opportunity to explore an authentic differentiation experience became apparent. This understanding presented a huge turn in the teacher-researcher's understanding of action research and the immersive and authentic experience it offers. Synthesizing this new understanding with the observations about the aforementioned affective characteristics and their impact on student achievement guides the continuation of this research.

Additionally, the researcher further seeks to understand the exact impact of small group features that appeared to provide equal value as flexible differentiation during Research Period 1, in which no difference was seen between the treatment and control groups. If group placement in this instance did not demonstrate a significant difference in achievement, what factors did these two groups share that allowed for student achievement? Does the type of skill being covered influence the impact of flexible and formative differentiation as the teacher-researcher suspects and if so, which skills are best suited for flexible grouping? Although data from this study supports answers to these questions, further replications are needed to explore this connection.

Further Interventions

Next step investigations focus on identifying the specific characteristics of small group learning that contribute to student achievement and determining if there are indeed specific skills that are best suited for flexible differentiation as opposed to heterogeneous

grouping. Characteristics of small-group learning as focused on in the results of this study include placing the teacher in the role of practitioner and proximity of teacher to student. Additional factors identified for further study are repetition of skill, student-to-teacher ratio, and using formative assessment from teaching-practitioners to fine-tune and identify the need for additional intervention programs. Further research will focus on identifying the impact of these characteristics through observation, student interviews, and surveys.

Design for Further Action Research

Additional research on flexible differentiation requires the use of mixed methods in order to have both quantitative and qualitative indicators to provide a holistic picture of its impact on student achievement and affective characteristics. Although quantitative data proved to be foundational for identifying the impact of flexible differentiation on student achievement, due to the results of this study the teacher-researcher recognized the importance of further documenting the unfolding of events in the self-contained classroom through the use of narrative inquiry. A longitudinal study over the course of a school year provides the opportunity to further unlock how the process unfolds over an extended period of time and takes into consideration the ebbs and flows that happen throughout a school year. Additionally, data that follows the ability of formative assessment to target a student's need for intervention outside of the classroom supports the idea of operating in the role of teaching-practitioner. The inclusion of other teaching practitioners and their students allows for thorough comparisons in how flexible differentiation impacts students.

Such research would require the participating teacher-practitioners to commit to using a form of flexible differentiation. In keeping with the underpinning philosophy that the framework of flexible differentiation is molded according to the needs and cultural intricacies of a self-contained classroom, the opportunity to observe a variety of strategies of flexible differentiation in the self-contained classroom would contribute to the dialogue. Narrative inquiry allows the participants to have a voice and gives insight into how flexible differentiation develops as a process, rather than a procedure. Qualitative data collected through the narrative inquiry process would further provide understanding about the interwoven nature of flexible differentiation, affective characteristics, and academic achievement as identified through the research in this study. The opportunities to further explore this topic are endless as the range of variables, including age groups and subjects, provide much to explore.

Transferability of Findings

Action research presents issues specific to the nature of research conducted by a researcher-within in her "native" setting (Herr & Anderson, 205, p. 63). The teacher-researcher must maintain an awareness of factors that may be commonplace to her but present unique dynamics that impact the trajectory of the research process. In contrast to the positivistic nature of validity in traditional research, the action research in this study sought a "truth value" (Herr & Anderson, 2015, p. 62) grounded in trustworthiness. The pursuit of trustworthiness generated a framework that encouraged the researcher to acknowledge when the data did not align with the projected outcome or when unexpected challenges arose. Through the disclosure of the self-reflexive process, the teacher-researcher established credibility (Efron & Ravid, 2013).

Although the data and outcome of this study is specific to the setting in which the research took place, it does provide application for differentiation practices within the local setting. In keeping with the goals of action research, the process of this study generated knowledge that can be applied to other settings. This knowledge developed through insights gained from multiple qualitative components in which students' documented behavior and commentary provided additional explanations for the quantitative data. These varied sources provided triangulation and an added element to support the trustworthiness of the researcher's interpretation (Efron & Ravid, 2013). Known as "value add" (Creamer, 2018, pp. 35–36), the connection between the different methods of data collection was established. Following this triangulation, the conclusions were connected back to the theoretical framework to ensure they were situated in a sound theoretical foundation (Efron & Ravid, 2013). The dialectical pluralism provided through mixed methods research contributed to the unveiling of important insights about the connection between affective characteristics and their impact on academic achievement as it relates to flexible differentiation.

The insights made possible through the paradigm of dialectical pluralism serve to further the scope of the data in empowering other teaching practitioners to understand the complexities of intersectionalities within the self-contained elementary classroom. The teacher-researcher intends to pursue further investigation and share the conclusions of the research with other educators to extend the reach of the research beyond that of one classroom.

Conclusion: A Review of Action Research Goals

The teacher-researcher situated the study design in action research methodology to provide the ability to use the lens of the researcher-within. Action research methodology presented the framework for a design that contained structural and theoretical strength while still allowing for trustworthy research that unfolds as new discoveries are unveiled. The goals of action research perfectly aligned with the intent of the study to extract both qualitative and quantitative data from an authentic setting in which the research presented a holistic picture of flexible differentiation's impact on academic achievement and affective qualities in varied student subsets.

New Knowledge

Through the process of action research, new insights developed regarding the connection between the affective characteristics of students and their academic achievement. The study identified the way in which flexible differentiation promoted positive affective characteristics that significantly impacted academic achievement in various subsets in the self-contained classroom. Additionally, the research contained within this study highlighted the power of attending to students' strengths, instead of solely areas of challenge and presented new opportunities to extend its impact to after-school intervention (Reis, Baum, & Burke, 2014; Ronksley-Pavia & Townsend, 2017).

Although it is well-documented that there is a connection between a community of practice structure and the success of particular subsets of students, such as ELL, the examples provided in this research contain details that allow teacher-practitioners to understand the complexities of this impact upon students and remain cognizant of the way in which students' language ability influences their experience of the classroom

environment (Lave & Wegner, 1991; Vygotsky, 1978). The vignettes in this research present the story and voice of students that represent the various ranges of subsets, additionally highlighting the often-misunderstood area of twice exceptionalities (Reis, Baum, & Burke, 2017). Throughout the data collection period, the students appeared to recognize and articulate their wonderings and observations as they experienced the flexible differentiation process.

Action-Oriented Outcomes

Through the action research process, the teacher-researcher cultivated an increased ability to recognize opportunities within the classroom environment to fluidly and efficiently address students' needs. The process of data collection created a heightened sense of observation and awareness to aspects normally taken for granted within the local setting (Herr & Anderson, 2015). Besides these added insights, the teacher-researcher obtained a greater awareness of the important influences of affective characteristics on student achievement and how flexible differentiation supported this connection.

Throughout the research process, the teacher-researcher came to terms with the ever-shifting nature of action research and the important contributions of on-going alterations to the research plan. The strength of a research design can be found in the way it responds to moments when identified weaknesses present themselves. During the second research period, a turning point arose when the prearranged schedule needed to be adjusted to account for unexpected results. Although this surprise initially caused concern, it resulted in the perfect depiction of authentic differentiation in real-time.

Empowerment as a Practitioner-Researcher

The process of action research enacted a sense of commission to pursue the complexities of the flexible differentiation process in the self-contained elementary classroom. At the outset of this research study, the teacher-researcher sought to encounter definitive answers to contribute to the conversation about flexible differentiation. As the study progressed, significant change and professional growth occurred as the process became more meaningful than a product or any specific outcome. Action research afforded the opportunity to formalize a method of analyzing differentiation without confining it to a pre-determined path. This understanding secured one of the most powerful moments of awareness throughout the entire research process by establishing the ever-changing nature of teaching and the transformative nature of teaching as a practitioner.

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Appendix A

Sample Pre- and Posttest Questions

Due to copyright, a list of sample pre- and posttest questions are listed below. These questions are similar to the questions used for the pre- and posttest. Each test contained 12 questions: 10 grade-level questions and 2 above grade-level bonus questions. The pre- and posttest questions were blocked and matched to provide consistency.

Test RI 2.5: Know and use various text features (e.g, captions, bold print, subheadings, glossaries, electronic menues, icons, and indexes) to located key facts or information in the text.

After reading a short informational text, students were asked the following:

1. What features of this text help you know it is informational text?
2. Why are words in bold print?
3. What are you most likely to read about under subheading _____?
4. Tell me one detail from subheading _____.
5. What is the topic of this text?
6. Tell me one thing you learn from the diagram/chart.
7. What does the caption help us know?

8. (Observational 1:1 assessment) Student can identify the index and what it helps you know.
9. (Observational 1:1 assessment) Student can identify the table of contents.
10. (Observational 1:1 assessment) Student can correctly choose a chapter from the table of contents based upon the information they want to know.
11. (Above grade level, but will not be disclosed to student) How is the diagram related to the text?
12. (Above grade level, but will not be disclosed to student) What additional information did you learn from the sidebar and picture?

Test L2.1e: Form and use the past tense of frequently occurring irregular plural verbs (e.g. sat, hit, told)

Fill in the blank examples.

1. We _____ a show about puppies. (see)
2. When _____you go to the beach? (do)
3. She _____ to buy milk at the store. (go)
4. The teacher _____ us to do our homework. (tell)
5. My friend _____she will play with me. (say)
6. I _____ my class about my trip. (tell)
7. _____ you remember to bring your book to the library? (do)
8. They _____ you about the award. (tell)
9. Rewrite the sentence. Use the past tense of the bolded word.

We **go** together to the movies.

_____

10. Rewrite the sentence. Use the past tense of the bolded word.

    You **tell** your friends about your favorite book.

    _____

11. When we played hide and seek, they _____ behind the tree. (hide)

12. They _____ the race yesterday. (run)

Appendix B

Flexible Differentiation Rubric

Standard	Below Grade Level: 1	Approaching Grade Level: 2	Proficient: 3	Above Grade Level: 4
RI 2.5: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, electronic menus, icons, and indexes) to located key facts or information in the text.	• Can identify text as informational but cannot give characteristics . • May identify 1 -2 text features. • Cannot use text features to extract information.	• **Identifies at least 3 features of informational text.** • Understands why some words are in bold. • May identify some information from text features, but there is not clear connection. *Student may not move to Level 3 until they can complete bolded task.	• Identifies 3-4 features of informationa l text • Can state the topic of the text • Can extract simple information using text features	• Score of 9 or 10 • answers 11 or 12 correctly
L2.1e: Form and use the past tense of frequently occurring irregular plural verbs (e.g. sat, hit, told)	Student scores less than 6 out of 10 correct.	Student scores 6-7 correct out of 10.	Student scores 8-9 correct out of 10.	• Student scores 9-10 correct out of 10. • Student correctly answers BOTH 11 and 12.